

>>> MURLEAN TUCKER: Welcome to addressing health, equity and cancer prevention, spotlight on radon in Kentucky.

My name is Murlean Tucker, and I'm here with my colleague Jeff Bornstein. Together we'll be running this dialogue4health web form. Thank you to our partners for today's event, the Kentucky Cancer Consortium, the Bristol Myers Squibb Foundation, the University of Kentucky center for Appalachian Research in Environmental Sciences, the American Lung Association, BREATHE bridging Research Efforts and Advocacy Towards Health Environments and the Kentucky Association of Radon professionals.

And now to start off today's event, I'd like to introduce Kristian Wagner, the Health Policy Director of the Kentucky Cancer Consortium. Welcome, Kristian.

>> KRISTIAN WAGNER: Good morning. Thank you, Murlean. Good morning to everyone and welcome. We welcome you from the Kentucky Cancer Consortium. Thank you so much for joining us for addressing health equity and cancer prevention where we're looking at radon in Kentucky.

We're excited to explore this topic a little bit further and explore it through a health equity lens.

Addressing radon is a priority for the Kentucky Cancer Consortium and we work and collaborate with some fabulous partners in Kentucky. Some of whom you'll meet today.

We also strive to always incorporate health equity in everything that we do.

Thank you to our panelists for lending your expertise and your knowledge today. And thank you to the Center for Health Law and Policy Innovation for

coordinating and creating this unique opportunity to look at radon through health equity lens.

So thank you so much for joining us, and I'll pass it on to Sarah Downer.

>> SARAH DOWNER: Good morning, Kristian. I think we'll have some slides that will come up. My name is Sarah Downer. I'm the Associate Director at the Center for Health Law and Policy Innovation at Harvard Law School.

We're so pleased to join our Kentucky Cancer Consortium and all of our partners to discuss exposure to radon and focus on the health equity lens.

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Just a little bit about our center. So we are Harvard Law School where we focus on how to use law and policy to improve health care for everyone. But especially those who are living with or who are at risk for chronic illness.

And so that's the reason that we really are here today to talk about addressing radon exposure, because it's so closely tied to lung cancer.

We'll really been incredibly privileged to be able to work with members of the Kentucky Cancer Consortium before to analyze insurance covering for lung cancer screening and tobacco medications. And our interest and work on radon as a natural extension of that as another way to address and prevent risk of lung cancer.

Two years ago we began to work with a team in Maine. The Maine Cancer Coalition to analyze radon policy. And in the process of focusing in on Maine, we realized we had to do a national scan of radon laws across the country which is noted in the report that you see on the slide, and that we'll be discussing today.

Next slide, please.

So my wonderful colleagues Rachel and Sophia today are going to share our key findings and learnings from that initiative. And we're going to look at Kentucky radon law policy compared to what's around the country.

Next slide, please.

And then we are absolutely able to have a panel with experts to see where we're headed with respect to radon today in the state.

Next slide.

So the first thing that we want to do before we jump into this conversation is get a definition out there of health equity. What is health equity? Why are we going through this discussion of health equity.

So we're going to use the definition which is that everyone has a fair and just opportunity to be as healthy as possible. We want tools that will enable people to take advantage of those opportunities. We actually want equal outcomes. So that's what we're really focusing on when we talk about health equity.

This includes removing obstacles to living in safe environments, in particular, for the purposes of our discussion today.

So when we look at what we need to do through the lens of health equity, the solutions that we arrive at are often different than if we do not apply that lens, right?

So if we don't apply a health equity lens, the solutions we arrive at are more likely to look like the ones on the left scenario on the slide. Where some people are getting what they need. But certainly not everyone.

If we apply the health equity lens, we're more likely to end up with the scenario on the right where those solutions get us to the place we need to be in terms of outcomes.

And you can go ahead and click, Rachel. With respect to radon exposure, we're concerned about three main categories of inequity that we're really going to discuss today. And those are unequal access to information about being exposed to radon.

How do you know if you are? Then we're concerned about inequities

and access to resources to address that exposure. So if we know we're exposed, can we actually take the steps that we need to mitigate and address that exposure?

And there are lots of ways to do that. But can we actually take those steps? Do we have the resources to do it?

And then there are -- there's a third category where we're really worried about inequity in the agency or decision-making power to take the actions that you would need to actually address radon exposure.

So even if you know about it, even if you have the resources to address it, can you actually make the decision to go ahead and hire that contractor or install that radon mitigation system.

And you need to push the conversation a little further. When we talk about policy and system levels change and why these things are important, we're really trying to get beyond just providing tools to address inequities. We're trying to level the playing field.

And equity is having everyone having what they need to solve the problem created. And justice is removing the circumstances that create the need for those tools that creates the problem in the first place.

And so with radon being a naturally-occurring substance, it's hard to remove the circumstances entirely. But we can really approach the scenario of justice by solving for those inequities and information resources and agency.

Next slide.

And then before I turn it over to Rachel and Sophia, I just want to level this really briefly. We have absolute experts on radon on this call today. I'm not going to go too far into the details. But just so we know what we're talking about, radon is a gas formed by the natural decay of uranium found in rocks and water and soil. It's very common. Right? So nearly 1 in 15 homes has that elevated radon level.

And it enters buildings through cracks and joints and gaps in the structure.

So it is -- we're concerned about it because it's odorless. It's tasteless. You can't see it.

But the good news is you can pick it up on tests. And if you find it, there are things that we can do, proven techniques for addressing that exposure and mitigation.

And the stakes are incredibly high across the country if we don't do that. And they're incredibly high here in Kentucky. Right. So radon exposure is the leading cause of lung cancer among non-smokers. The second leading cause of people that do smoke. And there is a synergistic effect. If you're a smoker, the risk is higher.

Here in Kentucky we're concerned about that because the lung cancer risk is so high and because we have some compounding risks that exacerbate those disparities that we saw on the previous slide.

We have rural areas where we know incidence of lung cancer and mortality rates are higher here. A high rate of smoking. And some of that is socioeconomic factors that are compounding the risk of radon exposure. So really important to address it here in Kentucky.

And we have -- so we have the opportunity today to have a discussion about how we can move closer towards an equity lens.

And very good news is that we have so many incredible experts on the ground here taking a lot of action. And because the radon landscape is so all over the place across the country, every state has the opportunity to get us closer to a place where we really are addressing some of the issues that we see with a lot of steps to get us closer to that place.

So we'll be able to talk about all of that today.

Now I'm going to turn it over to Rachel, and she's going to talk about a

report and some of the findings and then Sophia will talk about Kentucky in light of some of those findings.

>> RACHEL LANDAUER: Thanks, Sarah. Hi, everyone.

As Sarah mentioned, we took this radon law and policy and in particular we looked at five areas of law. One state policy to support testing by providing test kits. We looked at state policy to require testing. So does a mandate exist. In what settings and under what circumstances.

Next we looked at disclosure requirements. If someone tests, who would then kind of the bubble of people who would be at risk do they have to inform. We also looked at mitigation requirements. So does a state mandate actually require remediation of radon levels. And, again, if so, in which settings or under which circumstances.

And then we looked at state policies helping people or pay for mitigation, via grant funding, low interest loans and similar mechanisms.

And in this report, we really focus on policy. And there's a tradeoff here. So we missed capturing lots of rich and meaningful activity not yet reflected in laws and regulations that happen through radon control programs, organizations across the state and pilot programs and other grant-funded initiatives.

On the other hand, by honing in at this level, sort of these creatures of law and regulation, we're able to assess what sort of enforceable, sustainable commitments are created.

Now, as we reviewed the national landscape and we're thinking about elements and examples of best practices that we were seeing, two things really stood out to us. First, general trends raised significant concern about radon policy and health equity. And by contrast, some states demonstrated a really clear, intentional commitment to approaching radon policy from an equity lens.

Breaking it down a bit further, one of the first things we noticed was that policy is often very piecemeal. We don't see a consistent integration of testing, disclosure and mitigation-related initiatives.

Maybe there's only a testing requirement or a stand-alone disclosure requirement.

And by having only one aspect of radon policy, sort of one type or layer of intervention, we're essentially taking a quality approach. Right? Creating one platform for everyone to stand on, regardless of their individual needs.

That's problematic for several reasons. One issue we end up seeing is this sort of information asymmetry. A disconnect between who knows about radon exposure and who is most affected.

So landlords may be aware of exposure to elevated radon levels in a building and not have to disclose to tenants. A school administrator to parents of children in the school. You think about an assisted living facility and administrators knowing about elevated levels. But not having to disclose it to residents.

The one size fits all approach impacts resources and resource constraints. As Sarah mentioned, many people may become aware of the risk of radon who do not have the resources to test and/or mitigate.

Then we ultimately have this perverse effect where we're disincentivizing action. If I'm privy to a requirement but there's no underlying testing requirement, I might decide it's in my personal best interest not to test.

And if testing support is available but not mitigation support, and I know I won't be able to fix the problem, I might be more apathetic towards testing.

We also found that state radon policy tends to be really narrowly crafted. So hyper focused on one, maybe two environments. Most commonly private residences and

water sources.

But this leaves residents with some of the least agency to test and mitigate for themselves the most vulnerable.

Two short stories here. Not long ago there was a large investigation by the Oregonian to which state and local authorities were ignoring radon risks in public housing. And the investigation found that more than 400,000 public housing residents live in areas of high risk for indoor exposure.

But that many officials didn't test. If they did test, it was maybe in a small percentage of units. Some sat on the results without fixing the problem. Or even informing the residents. Right?

And so our policies in this instance are really failing to protect some of our poorest and more vulnerable families.

There's also a class action lawsuit under way in Federal court in Connecticut, that's the news headline on the right in the slide, about the state's failure to protect people in prison from known radon exposure.

Now, the prison learned of its extremely high levels of radon in a roundabout way. Connecticut has a school testing requirement. It's been on the books since 2003. And a decade in in 2013, a teacher at the prison's school used that law to say that they should test the classrooms.

For us, this example really speaks to how fragmented the policy landscape is and how we need to be thinking about radon policy much more comprehensively so that we're actively protecting people and we're not taking this patchwork approach where we're relying on a school testing program and an individual champion at a prison to really activate that testing.

On the other end of the spectrum, we see states that are taking a much

more holistic approach to radon risk reduction. And really with an eye on equity and agency and empowerment.

There's a strong testing requirement in Florida that applies to all public and private school buildings. All state-licensed day care centers. And on this bucket on the side, state owned, state-regulated, and state-licensed 24-hour facilities.

Now, this provision reaches a huge number of residents that may otherwise lack the agency we've been talking about. Hospitals, nursing homes, foster homes, assisted living facilities, mental health facilities, detention centers, prisons, right? Really large swath of the population.

Another state that we highlight as a model is Colorado for its low income radon mitigation program. The state had a testing kit program. They were doing outreach and education. But we're seeing really on the ground how that wasn't enough for some people. Not everyone could take that information, take the testing kit and really run with it, right? Some could. Others couldn't.

So they set up this program to provide grants to low income households. And this is the great news, right? We do see states bridging the gap. Really ensuring that our radon policy empowers people to address exposure and reduce their lung cancer risk.

With this kind of national landscape in mind, though, we want to turn to focus on Kentucky. Right? What's happening in Kentucky. How advocates are thinking about and moving on equity-driven initiatives in the state.

There are lots of interesting programs and policies under way that aim us in this direction. Right? Move the legal framework. Legal infrastructure further in this direction. And that's what we'll be talking about.

First I'll hand things off to Sophia to give us a snapshot, though, of the current landscape.

>> SOPHIA BREGGIA: Thank you so much, Rachel. So I would like to start with some background about radon levels in Kentucky. Rachel, if you could just go to the next slide. Thanks so much.

First we want to take the time to thank BREATHE and the Kentucky Geological Survey for creating this interactive state-wide map and collecting county data on radon exposure. These maps go beyond what's available in many other states in understanding exposure risk.

Most counties in Kentucky have areas with average indoor radon potential measurements at or above EPA actionable level, which is 4 picocuries per liter.

Any area on our map that is yellow, brown or red indicates averages above EPA actionable levels. Any area that's green may be at EPA actionable level. And even looking at least danger or mild danger areas, any home, school or other building could have the radon levels at or above that EPA actionable level as well.

And communities bear the weight of radon exposure unequally. So this means there are significant health equity concerns tied to radon policy.

First, Kentucky's communities of color face elevated radon exposure. Average radon levels in Jefferson County, which has the largest Black population in Kentucky, are generally double EPA actionable level.

Average levels in Fayette County, which has the second largest Black population, are generally 2 to 4 times that EPA actionable level.

And half of Christian County, which has the third largest Black population, has average levels that are 4 to 6 times that EPA actionable level.

Many higher risk counties also have low median household incomes. This means there's a high risk of exposure in those communities that might not have the resources for testing and mitigation which puts an unjust burden on these low income people.

The severity of equity concerns are also heightened in rural areas, as Sarah touched upon.

All of these additional barriers that we have listed on the screen here compound, magnifying that risk of being exposed to radon and that inability to mitigate.

So looking at these maps, it's clear how essential it is that Kentucky has a range of policies for disclosure, testing and mitigation that protect its most vulnerable populations in all counties.

And now we're going to move into the current landscape of radon policy in Kentucky. So this chart shows us a direct comparison between Kentucky's current policies and the best practices outlined in that radon report that Rachel and Sarah have just discussed.

In the report, we looked at the areas of disclosure, testing and mitigation. And here we're comparing the current Kentucky policy in those categories to the best practice policy identified in our report.

Something we would like to recognize first, and that Rachel spoke about as well, is that the report takes a strict yes or no approach to mandatory requirements in these areas.

But in practice, looking at policy, there are policies that come in as important steps along the way, like voluntary testing and recommendations to test or mitigate that haven't been included in the report.

Back to the chart where you see a green checkmark, it means the current policy reflects best practices. The red X means that current Kentucky policy is not like the best practices because there isn't policy in these areas currently.

And our yellow caution sign means we're working towards best practices, but we see some key pieces missing.

So starting with that caution sign, let's take a look at Kentucky's current

practice for disclosure.

If you go to buy a home in Kentucky, this is what you'll see. The person selling you the home has to disclose if they know of any radon testing. And if so, the results. They'll also have to disclose if they know of a radon mitigation system in place and if it's working properly.

And you'll read this general warning of the risks of radon here that you see on the screen.

Something that you won't see here is required an acknowledgment by the buyer. This is an important step. Because active engagement, like signing or initialling underneath that radon warning, make sure buyers don't overlook the risk and sellers can't hide the information in the fine print.

What I would like to draw attention to now, however, is that current home disclosure protections in Kentucky do not extend to renters. What this means is that the building you're living in could have elevated radon levels. And the land owner could know but not tell you. They could also test the building, decide they don't have the resources to fix it right now, but meanwhile you're still living there.

And looking through our health equity lens, low rates of home ownership, especially for Black and Latinx residents, mean that lack of renter protection poses a health issue. A 2019 report estimates that 22,000 Black families would need to be turned into homeowners to close the housing gap between Black and white residents in Louisville. This is similar to what we see in Kentucky overall.

In this bar graph we see home ownership versus renters in Louisville in 2019. And here on these pie charts, you can see that Black residents in Kentucky represented by our blue slices are more likely to rent or own. Left versus right. And also Latinx residents are more likely to rent.

This means that both groups are disadvantaged by a disclosure requirement that only applies to real estate sales but not rentals. This leads to a disparity in that risk.

There's also over 400,000 homes rented by white residents in the state. So this means that Kentucky policy overlooks a total of over half a million families who rent. And because renting often indicates being lower income, the state protections are overlooking these more vulnerable households.

So using our health equity lens, we can see the places where there's still work to be done in our policies. And now we can kind of see why we have that yellow caution sign on disclosure.

We can also use our health equity lens in the future when we think about designing a testing or mitigation policy that's proactive about our equity concerns.

So now taking us back to this current policy chart, Kentucky follows best practices through an active testing support program by providing free test kits to residents year round.

But Kentucky has no mandatory testing requirements. No mitigation requirement. And no state sponsored mitigation support.

Without mandatory testing, disclosure can't get us very far. Because you won't know if there's radon present or not. Without mandatory mitigation and mitigation support, even if you know about elevated radon levels, if you can't afford to mitigate or your landlord doesn't want to, you might be out of luck.

But looking just across state lines, we can see these types of requirements making a difference.

First let's take a look at our neighbor West Virginia. West Virginia has a combination of testing requirements, mitigation requirement and mitigation support for public

schools.

A little bit about the policy. Public school buildings have to be tested the year they open and every five years after. This is important because it makes sure, as we were just talking about, elevated radon levels will be found.

And if radon levels are above the threshold that the school building authority specifies, the school has to mitigate. And then to help with mitigation, the school building authority can give major improvement project grants that can be used for projects to bring buildings up to code, including radon-risk reduction.

In 2020, the school building authority awarded over \$4.7 million in MIP grants. So what we're seeing is that in West Virginia, schools must test. If elevated radon levels are found, they must mitigate.

And if they can't afford to mitigate, there's help. This is so important in places like schools since children spend so much of their time there.

Overall, Kentucky has an 85% enrollment rate in public schools. But in Kentucky, there are no protections for schools like these. Nor any of the range of buildings where we would want to see these protections.

Another concern is that communities bear this risk unequally as we've been talking about. So Jefferson County -- in Jefferson County up to 60% of all buildings have elevated radon levels. But also in Jefferson County, almost 60% of all the K-14 students are non-white.

So thinking back to what we've been discussing, this means that on top of having a high number of residents who are more likely to rent than own, those residents are sending your children to school and buildings that probably haven't been tested. Or even if they have been, don't have to be mitigated, which leads to a disparity in that risk.

So now we're going to hop over to Indiana, which has a similar

disclosure requirement and testing support to Kentucky. But Indiana has gone a step further and has mitigation support.

The Indiana housing and community development authority has an owner-occupied rehabilitation program that gives grants to local governments or non-profits to help with home repairs to low or moderate income residents. The funding comes through community development block grants from the state government.

So local government and non-profits will go to the grant, directly to the municipalities, and then individual residents can contact about applying for a funding for home repair. The money can be used to address conditions that would cause problems with the integrity of the home or impact the quality of life for residents, including radon mitigation.

In 2020, the IHEDA approved grants to nine municipalities to assist with repairs for over 114 households. And 103 of those households have a household member who is a part of a target population for the program.

These target populations included individuals with disabilities, veterans, seniors and single parent households.

As another source of funding, Indiana's radon gas trust fund allows the state to fund their state radon programs. Overall, thinking about Indiana, it's important to see that these state funded programs help to address the unequal risk for low income residents.

All right. So I think I'm going to stop here. And that is because we are so excited to open this up for a conversation with our expert panel. They're going to talk about the amazing work that they're doing to move our policy that we see in Kentucky.

So I'll turn it back to Sarah to introduce them now. Thank you so much.

>> SARAH DOWNER: Thanks, Sophia. And we are over the moon to introduce you to our panel today who are absolute heavy hitters on the radon front here in Kentucky. And then nationally as well.

So we have Clay Hardwick with us who is the state radon Program Coordinator with the Kentucky Department For Public Health. He is charged with helping maintain the Kentucky coalition and is an active member of the radon quality assurance committee with scientists and technologists.

Then we have Shannon Baker, the Director of Advocacy for the American Lung Association where the mission is to prevent lung disease for advocating for public policies that is evidence-based. She is responsible with all of her experience over years for implementation for public policy initiatives, in particular here in Kentucky, and then also in Tennessee and Arkansas. And she also is charged with the Federal policies. Her work also has a national reach.

Kyle Hoylman.

[Computer froze]

>> MURLEAN TUCKER: I think we lost your audio, Sarah. Let's just try to fix her. Just one second.

>> RACHEL LANDAUER: While we're hoping for Sarah to re-gain her audio, why don't we start off with our first panelist Clay Hardwick jumping in to tell us more about himself, his work in re done area. And something you're just really excited about that's currently happening around radon policy in Kentucky.

>> CLAY HARDWICK: Good morning, everyone. I am the state radon coordinator here in Kentucky. Basically in my role I'm just taking the radon grant money there and just in Kentucky we work with the Health Department and universities.

I've been with the -- kind of involved in the Cancer Consortium for about 12 years now. Lung Cancer Prevention Network. And it's mostly been my role to keep with the goals of the grant, EPA grant, and try to get mores done testing and mitigation of residents here in Kentucky and reduce lung cancer and mortality.

So mostly it's just, you know, big focus towards keeping the radon levels, trying to keep them down among our residents. We try to do that with our partnerships and grants and everything. And just try to take on a new creative ideas to achieve these goals of lowering radon levels.

And so I'm working pretty much with our grant and our work plan and our cancer action plan. And we're happy that we have that involvement. And that's really just that collaboration is very exciting to me that we have that and that we can kind of just work with that and take that further and make more way with policy change as we can in the future.

And that's -- I'll finish off there.

>> SARAH DOWNER: Thanks, Clay. Sorry I disappeared in the middle of my sentence. It's everyone's worst nightmare on a webinar.

We're going to hop over to Shannon. Shannon, can you talk a little bit about your work and the thing that you're most excited about these days in Kentucky radon policy.

>> SHANNON BAKER: Absolutely. Thanks for the opportunity to be here today. And I'm really humble to be sitting on this panel of colleagues and experts in the radon space.

So as introduced, I'm Shannon Baker. I'm the director for lung advocacy in Kentucky, Tennessee and Arkansas.

First just a little bit about the lung association. We're the nation's trusted health champion working to save lives by improving lung health and preventing lung disease.

So we were founded over 115 years ago by a group of advocates dedicated to ending the lung health threat of the day. And at that time it was tuberculosis.

But with TB largely controlled in the U.S. now, we've extended our mission to a wide range of respiratory diseases.

So our work today focuses on four strategic imperatives. To defeat lung cancer, champion clean air for all, improve the quality of life for patients living with lung disease and their families, and creating a tobacco-free future.

So our work on radon policy intersects fully with three of these strategic imperatives. Starting with defeating lung cancer, radon is, as was noted earlier, the second leading cause of lung cancer. And lung cancer is the number one cancer killer of both men and women.

And that's largely because lung cancer is typically asymptomatic until it is in its later stages and very difficult to effectively treat.

About two-thirds of people diagnosed with lung cancer have never smoked or they're former smokers. And interestingly in the past 42 years, new lung cancer cases have increased by 84% among women while decreasing 36% among men.

Second the Lung Association is committed to clean air for all, and radon is most certainly an indoor air quality concern seeping into buildings, as we know, through cracks in walls and basement floors and foundations and becoming trapped inside the building.

And, finally, when radon exposure is combined with smoking or exposure to secondhand smoke, as has been noted, the risk of lung cancer significantly increases. So our work on tobacco policies necessarily effects radon-related lung cancer as well.

So my work in Kentucky's legislative and regulatory arena is to advocate for proven policies to reduce radon exposure where we live, where we work and where we learn all across the state of Kentucky.

And what I am most excited about is this opportunity and similar opportunities to drive awareness and education around the risk associated with lung cancer. Because policymakers are most motivated by constituent input. And the more broadly we spread the education, the more effective our advocacy can be in those regulatory and especially

legislative environments in Kentucky.

So that's it for me. Thanks very much.

>> SARAH DOWNER: Awesome. Thank you so much, Shannon. And I think I got kicked off before I finished Kyle's bio and didn't get to talk about Stacy. And as I was reading, Kyle's long list of qualifications, I think that's when it cut out. And basically the computer got tired of all of the amazing things Kyle is a member of and a part of.

But to sort of re-cap that, he is sitting on -- in a lot of national dialogues about radon, including the Action Plan Leadership Team, which I wanted to make sure everybody heard if they didn't hear it before. And is the President of the American Association of Radon Scientists and Technologists. And also serving on the board of directors of the Kentucky Association of Radon Professionals.

So, Kyle, can you tell us about the work that you do and the thing you're most excited about right now.

>> KYLE HOYLMAN: Sure. Thanks, Sarah. Shannon's introduction is a hard one to follow. Because that's -- I think she summarized the extent of our work in the state. And really what the focus on a nation-wide basis should look like. And at its least common denominator, it's preventing radon-induced lung cancer saving lives. That's why we're here and that's why we do the work that we do.

So I'm going to keep my feedback on this particular topic short. But I am going to focus on the affordable housing and the health equity aspects of what I see happening.

And that's really what would excite me to talk about today. So here in Kentucky we want to follow through with the work that we have accomplished with our notification and disclosure. It is out of the gate finally. We are seeing some impact.

But one of the challenges that we have is lack of data. So we want to prove that our program and our approach, which is more of a regulatory approach, versus

something you might see in Minnesota or Illinois, which is a statutory approach, those two states have seen tremendous results with the program.

So we have some work to do there. We also have work to do with our day care bill. Shannon and I will probably talk a little bit more about that today. Long story short, we ran out of time. So lesson learned. We'll come back to that topic.

But specific to health equity, there are some really good things going on at the national level. And that will impact what we're doing in Kentucky.

We learned a little more about the Oregonian report. And I was consulted as part of that investigative report. And that really opened eyes within HUD.

So one of the things now that happened is there is a \$4 million set aside for a radon demonstration project within our public housing. That's almost a little less than a million total housing units across the country. And we're now at the beginning of that dialogue.

Well, what doesn't affect the radon policy within HUD look like for its public housing. Now, there is a recent OIG report, Office of Inspector General report that came out in HUD. There's a lot of work to do. We need consistency across all public housing and the housing is one where we have work to do. But we're making progress, and that's the more than thing.

We're also seeing lending policy. We talked about what happened in residential care facilities, nursing homes, things of that sort. HUD's housing program has a very strong residential care facility radon policy which does include requirement for measurement, requirement for mitigation. And as importantly, a requirement to maintain these systems and to verify that if mitigation is ongoing at the property, that the system is maintained.

And more importantly that the property is regularly monitored to make sure a radon problem in areas that may not have presented itself today don't present themselves in the future.

HUD's housing program also has a multi-family component. And that affects a lot of folks living here in Kentucky. Same policy. Harmonization going on right now. But HUD achieved in 2018 we hit 1 million total dwelling units across the country that were measured and mitigated if appropriate because of that policy.

So there's some successes that we can point to. And there's some work that we can point to.

And one of the other areas that I think is important to talk about is what's happening within our military. That's certainly another health equity area.

And two years ago Senate Bill 1709 actually established requirements for both measurement and mitigation within all privatized military housing. That's in the United States, not abroad, but in the United States all privatized military housing must be tested one time every five years. Must be mitigated and maintained if appropriate.

And with Fort Campbell and Fort Knox here in Kentucky, there's a lot of folks that are going to benefit from those protective measures. That's certainly another health equity issues.

So a lot of progress being made on the health equity side of the policy discussion. And I look forward to participating today with my colleagues in opening that discussion.

>> SARAH DOWNER: Thanks, Kyle. We heard a lot of really rich information from you and Shannon and Clay and raise some of those and go into that in a little more detail.

First we would like to hear from our last but not least panelist Dr. Stacy Stanifer. She is an Assistant Professor at the University of Kentucky College of Nursing and the co-leader of the Center for Appalachian Research in Environmental Sciences Community Engagement Corps. She has an interest in health care policy and she carries her research and

findings to the Oncology Nursing Society both nationally and here in the state. And then the American Nurses Association and Kentucky Nurses Association.

So we appreciate you joining us today. And she has given me permission to address her as Stacy for the remainder of the conversation. So, Stacy, can you tell us about your work and what you're most excited about.

>> STACY STANIFER: Yeah. So thank you, everyone, for having me here today. In the College of Nursing, I'm a member of the brief team. And what we believe is that everyone should have access to clean air and live in healthy environments. And we do that in a number of ways through partnerships and community engagement and in research.

And so today I'll be just sharing with you all some of the important work that we have going on right now that's really innovative and exciting.

With that we have the goal of increasing access to radon testing and affordable radon mitigation in rural communities of Kentucky. And also as a health care provider just sharing information through that lens as a provider today as well.

Thank you, Sarah.

>> SARAH DOWNER: Thanks. So I do see a question in the chat that many of our -- much of our audience might be curious about. As we talk about radon mitigation, in particular, if you're not familiar with radon, that can sound really large and very expensive.

And so can we start off just giving a little bit of a sense of if you find radon on the property, what are the things that we need to do to address it.

And then we'll sort of move into some of the other areas we've discussed so far. Any panelist can take that.

>> KYLE HOYLMAN: I guess that's probably Clay, Kyle point. So, Clay, I would defer to you. Do you want to handle this topic or do you want me to start the discussion.

>> CLAY HARDWICK: Just answering the question of -- I'm sorry. I kind

of missed that.

>> SARAH DOWNER: No problem. Let me repeat it so that we start off from a place of shared understanding.

There's a question about so if you find radon on your property, what are some of the mitigation measures we're looking at and what are we looking at in terms of cost so we can be on the same page about what kind of resources are required to mitigate radon.

>> CLAY HARDWICK: Okay. Everything with mitigation, I mean, with the homeowner I'm commonly getting -- I get phone calls all of the time off topic. So we're just pointing them -- it is a voluntary process. There is -- I'm just basically in my role I'm just kind of wanting to connect them to the credentialed certified professional people that are out there and just make --

That's about as far as I usually take it. And then I'm just kind of trying to keep them -- I help with a little bit of the consumer protection and everything on that side of things.

And so but as far as the -- we'll kind of get into money and that kind of thing. As far as what's available as far as mitigation support, that's certainly something that we do need to work towards as far as helping lower income people.

>> KYLE HOYLMAN: I can jump in and add, if you would like, Sarah, I'll take the mitigation technologies. When radon presents itself in a building, the most common approach, and certainly the most common approach in Kentucky, is related to -- the technical term is active polarization. So think of it as a glorified vacuum system for the sub foundation of the building.

If radon is being pulled into the building through cracks, plumbing, things like that, how do you short circuit that. How do you interrupt that or mitigate the occupant exposure.

Typically the way that's done in our state is we install a mitigation system. The mitigation system is pipe. The pipe runs from the sub foundation area and it exhausts above the building where radon can dilute safely in ambient air.

There's a fan that powers that system. So the trick there is to maintain pressure differential that's negative so that before the contaminant comes into the building, we're mitigating that exposure and exhausting or discharging the contaminant in fresh, outdoor air.

Now, foundation types. So you have typical basement. Typical slab on grade. And then you have crawl spaces. Those are by far the two most prevalent types in Kentucky.

From a cost standpoint, that process in a slab on grade or a basement, my experience has been somewhere around 1300 up to 2200 on the top end, depending on the complexity of the foundation in the home, aesthetics, other things like that that goes along with that.

And then a crawl space is much different. So you have to actually create that area to contain and create vacuum under, which is a vapor barrier that has to be filled and patched. A lot more labor extensive. A lot more material extensive.

And as a result, your cost range on that is going to probably run somewhere between 2500 to \$4,500 for that type of building.

That single family residential. And then the cost go from there.

Talking from a national standpoint, you really have the other type, which is a mechanical ventilation. So when we see radon not coming from the ground, south Florida you see radon coming from the building or the concrete, you actually dilute the air instead of vacuum out from the building. And that's a different approach. But we don't really need to talk about that in Kentucky.

>> SARAH DOWNER: Fantastic. Thank you so much. That's really, really helpful.

And then thinking about the equity lens, I want to return to something that was mentioned earlier which is the day care bill. And sort of really get into what that bill was and the most recent legislative session. What it would have done. What happened to it. And how it gained support in the legislature.

So if you wouldn't mind telling the story, I think I'm going to direct this first to Shannon and Kyle. But then others can feel free to jump in as needed.

>> SHANNON BAKER: Sure. So first just a little bit about the Kentucky legislature. And so we run short 30-day legislative sessions one year followed by a 60-day session the next year.

And so it goes year after year. In such a short window of time, it's always important irrespective of the policy that we're promoting that we're fleet of foot. So we like to get our bills pre-filed and we like to build our base of support and we like to have our advocates signed on to the bill and ready to go when we ring the bell at the start of session.

And so in this particular case, we had great policy. We simply, as Kyle said earlier, ran out of time. And so there's a lot of competing noise in the legislative space as well.

And so our hope was to, as often the case, come back to that policy the following year. And so many times passing health policy in Kentucky is a multi-year process.

And so we were in our second year interrupted by the pandemic, of course. And so day cares in the state were struggling mightily as they were, in some cases, even closing their doors permanently. And it was not a good time to be advocating for policy affecting day care facilities.

So that's why we are today. And then, Kyle, may I turn it over to you to

talk a little bit more about the substance of policy.

>> KYLE HOYLMAN: Sure. So details. There are approximately 2,000 licensed day care child care facilities in Kentucky. This policy would have impacted that entire licensing group.

It would have required that when you become time to renew your license that you must present valid radon measurement results as a condition of that licensure.

Other than important aspects, the measurement must be conducted by a qualified professional which would be a professional certified by the Cabinet For Health and Family Services. And that professional must utilize the industry consensus standard, which are the standards for that building type.

Important issue or point from a health equity standpoint, the Bill absolutely required the day care operators to host publically the results of the radon testing, as well as send those results home to the guardians. I know that was an issue that was detailed earlier as an oversight. And I'm glad to say that we got that right in Kentucky.

The policy challenges stopped short of requiring mitigation. The political landscape was just not such that that was something that was healthy to push.

However, I think in this particular instance, if I'm a parent or a guardian and I know my child is being exposed to a cancer-causing radioactive material, that building is either going to be fixed or my child is going somewhere else.

So that is something that does happen from time to time. And that is you get the beginning of the policy correct and you let the market handle the back end of the policy.

And I would agree with Shannon. We have a strong sponsor representative Meredith out of Bowling Green. One thing that he did was contacted his day care and he asked the question. And the day care operator said absolutely. All of these facilities should be tested.

And that's where that advocate came from. And he continues to be a strong advocate.

>> SARAH DOWNER: I think that, Kyle, that really underscores some of what Shannon's point was that if you build awareness and you start to talk to different constituencies around the state, that's where you find momentum and excitement and enthusiasm.

So if nothing else from this webinar, we hope that everyone listening is evangelized to be in support of some of these efforts and maybe newly so. Maybe newly contacting some of your own representatives because of that.

Stacy, I'm going to turn to you, because we're in the zone where if we put that testing policy in place, we might test and people might know about it. And what do they do about it.

And I know that you've thought a lot about mitigation partnerships and especially some of the challenges of rural residents in mitigating radon exposure. So can you speak to that.

>> STACY STANIFER: Sure. So right now we have two projects going on at the College of Nursing. One is called radon on the radar. This is a five-year study that is funded by the National Institutes of Environmental Health Sciences. It's led by my colleague.

The purpose of this study is to increase access to home radon testing and affordable radon mitigation in rural communities. And we're working in four communities in Kentucky. Rowan County, Pulaski County, Christian and Logan County. And we picked them based on their low potential, the morality, and then we matched them on socio demographics.

But we recruited citizen scientists to test their home for radon. And they're helping us to build a library loan program. So we will be putting continuous home monitors in libraries in those counties. And the citizen scientists are going to help us recruit

others in the community to go and test their home and spread the word and help market this library loan program.

So our intention really is to grow access to home radon testing. And they can do that very similar to the way they can go to a library and check out a book.

So we're excited about that project. We're currently in our second year.

And then during this project, we have also really identified a need or a lack of access, I guess, for certified radon measurement and mitigation professionals in the rural areas of our state.

And so I recently was awarded funding from the Conference of Radiation Control Program Directors to address this, but increasing access to mitigation. And these high radon rural underserved communities.

So we are -- we have recruited, excuse me, two professionals in the communities to become certified in re done measurement and mitigation. And because a radon business wouldn't likely survive on its own in these rural communities, we targeted professionals that already are currently residing in and providing services within those communities and a similar type profession. And these two professionals we are going to be training them to become certified.

We're also going to be helping them with their expenses for their certification, exam and then licensing fees if needed.

But this really help to build capacity for radon mitigation in rural Kentucky and help address that barrier to mitigation that comes from the lack of access. So that's the mitigation partnerships that we're working on currently.

>> SARAH DOWNER: Fantastic. Thank you so much, Stacy. Does anyone want to add on to that?

One of the things that we would love to ask you all is so we talked about some of the exciting work. We've talked about some of the things that are coming up in the context of day cares where there's been a lot of movement. And maybe we'll return to momentum on that. Some of the rural focus partnerships.

What else do we need to see more movement on?

>> STACY STANIFER: I can talk about provider engagement, if you would like. Okay. So for me as a provider, the bottom -- and particularly in the oncology space, we have far too many Kentuckians that are dying from a highly preventable, costly and devastating disease.

So there really is a need because health care providers are a trusted source of information to really reach health care providers. Get them to talk to their patients about home radon testing and mitigation and really actually just make that recommendation for folks.

So one of the ways that we can do this to begin with is by educating our health care providers about the risks associated with this environmental hazard. Both the BREATHE team and the American Lung Association have online courses that are available so that folks can educate themselves.

The American Lung Association has a one hour course that's free. It's online. It's appropriate for everyone who wants to learn about the basics of radon and testing.

And then the BREATHE team that developed is, of course, a little bit more designed for the health care provider. It's a little bit more extensive. But it's self-paced, again, and online and free.

So this one will go over radon. About testing and mitigation. But then it takes a step further and discusses that radon risk messaging and how to communicate to your patients so that the provider is equipped to have those conversations. And this one provides

three credit hours of CEU upon completion.

And then recently we had a paper published that looked at social determinants of health and environmental exposures and rates of radon home testing. And this used Kentucky population level data.

And we found that as smoking increased within that county, we saw a decrease in home radon testing. As lung cancer incidence also -- what was interesting was that lung cancer incidence was not predictive of home radon testing.

So for me that tells me that we can do a lot more in the preventative medicine realm to try to mitigate the radon in tobacco and to our care that we're providing for patients.

And because there is this synergism between the two, we're teaching our patients to create radon and smoke-free homes.

>> KYLE HOYLMAN: I'll just jump in on that same message. We're lucky enough to work in a state with Cancer Consortium that understands the importance of lung cancer prevention. Radon is one of the three goals within that state or within Kentucky.

So low dose CT scanning. Smoking cessation. And radon. So how do you prevent exposure to radon? It's through a lot of the policy efforts that we're talking about today.

One of the main issues for me what we have more work to do on code adoption. Right now if there are approximately 20,000 residential dwelling units that are constructed each year in Kentucky. There's absolutely no requirement to include radon control.

As an industry, if we fix 2500 residential dwellings per year but we create 10,000 new problems, we're going backwards.

So a line in the sand with that. Very important prevention strategy.

As far as schools, child care centers, that's important. And workplace.

OSHA has a policy if you want to call it that that would require workplaces to be tested. There needs to be a lot of work on that topic because policy is not a good policy. It needs to be updated. And apply that into our state.

So work on those areas. It's really in the prevention realm. How do we prevent radon-induced lung cancer? We prevent exposure to the toxin to begin with. And then we work with health care professionals to understand the synergies between radon exposure, smoking. And we underscore and go back to that cancer action plan which is basically those three topics. Low dose CT scanning, smoking cessation and radon testing and mitigation. That's our work effort.

>> SARAH DOWNER: Thank you so much, Kyle. We have done some conversations with health care providers but really focused on health care providers before. And one of the things that they asked about is we would really like to hang our hats as health care providers on a policy.

Right. So we can tell our patients you have a right to have your building that -- your apartment that you rent tested. Or you have the right to know if there's radon in your property.

And so when the policies and that kind of discussion don't go together, it can be challenging. So I love that there are resources out there for health care providers. But I think you really underscore the point that those things need to be married to really good policies so that they can -- the folks on the ground have agency and they have the ability to sort of take action and they're empowered by those conversations.

So thank you so much.

And now I want to also address something that you talked about with the workplace policies and the OSHA policy and you sort of described some deficiencies there.

Would you like to say a little bit more about that? Sarah.

>> KYLE HOYLMAN: To whom the bell tones.

The OSHA policy, I believe, was 1958 or earlier. Certainly there is some folks out in the national level. Bob Lewis from Pennsylvania is an expert on OSHA policy.

So Bob may need to correct me. But the policy is horribly outdated. And what it does, depending on how you calculate, is it establishes a workplace exposure of 100 picocuries which is a pretty high level of exposure. Or maybe 25 depending on how you interpret it. So that is really the core policy.

There's no requirements to test buildings. I think the language is vague in that it states if the building owner has a reason or it's reasonable for the building owner to know that radon may be a problem in that area, then they need to test.

So it doesn't require any type of measurement or mitigation as part of the policy. It only establishes levels of exposure which, again, are quite high and really need to be brought in. So alignment with today. Not 1960s.

>> SARAH DOWNER: Thank you. And what I would like to -- you know, as we sort of kind of come down to the close of our conversation, I would like to switch us over to strategies.

So as we think about how we push some of the policies that we would like to see into being, what do we really think is necessary? What are new constituent views that need to be engaged? How do we engage them? What kind of messaging needs to be out there.

Can you talk a little bit about how we build support and engagement on some of these issues. Things you've seen work.

>> SHANNON BAKER: So I can contribute to that and then hand it off to some others. I think that your point about building consensus and education and awareness -- and we've talked a lot about that throughout this entire conversation is critical foundation to

moving forward.

And so here in Kentucky we face a heavy lift sometimes in the legislature as it relates to public health policy in general. And certainly anything involving mandates.

But incrementalism is certainly important. And widening the audience and the advocates behind radon policy is also especially important.

So one of the things we think about here in Kentucky we're seeing a conversation around -- a successful conversation around student safety. Moving policy forward.

And so when we look at schools in particular, framing the message and the context of student safety to begin with achieves a number of things. It broadens the conversation. It perhaps includes new advocates. Wouldn't it be nice, for example, if Kentucky teachers joined that conversation.

Because it's not just student safety. It's teachers who work in that school year after year after year. And so I think that kind of messaging and new support pushing us forward is exciting. And it breathes -- pardon the pun, it breathes new life into the conversation. So it's something that has potential and I'm excited about going forward.

>> STACY STANIFER: We've been working actively to try to identify partners in rural communities that can help with mitigation support financially in these rural communities. We have been exploring grants that are available out there. Many of them which are low income based.

We currently to our knowledge do not have anything that the state offers to cover the cost of mitigation for these folks. But we are currently exploring things like USDA grants for very low income folks. There's a grant out of Cincinnati called the Carolyn Peterson grant. All of them are income based.

To our knowledge they haven't been used foray done mitigation in the past. It's not to say they couldn't be. So we're currently working to investigate those.

But one of the other issues that we've identified is really having a partner in those rural counties that we can see and act as a conduit for people able to receive those grants.

We did have a really great organization. And they've been wonderful working with us helping us to provide insight into this area of housing. It's a little bit out of my wheelhouse, but I'm learning. And then they're connecting us with others in the community as well so we can continue to explore it.

And I'm hopeful through these discussions, I think there are other organizations that are doing related work. And perhaps they just never considered radon mitigation. So I'm hopeful that as we continue these discussions that we'll find organizations in rural communities that are really interested in addressing this health hazard.

>> SARAH DOWNER: Kyle or Clay, would you like to add on to some of the strategies that you think have been effective.

>> CLAY HARDWICK: Well, I think -- I'm in agreement with a lot of what Stacy was just saying there. And I don't think -- I think that -- I was thinking in terms of mitigation support, there's not really a clearly defined strategy right now at the state level.

But I think that there's more -- there's opportunity there with our housing corporation. We've had some discussions on that. And I think that we can maybe work a little bit more there. And hopefully that stretches out to some local or rural support.

So it's an area that just I think we'll make more efforts towards. We are making efforts towards. But it will just take a little bit more data, getting some data pulled together among our group here and making a compelling case on that.

>> SARAH DOWNER: So bringing up that really important point of data and the need to really collect it, analyze it, see what it says. And then bring in some new partnerships. And I think anyone who has tried to lead or participate in a coalition knows that

those conversations take time and engaging those partnerships take time. So thanks so much for that perspective.

And then, Kyle, anything that you wanted to add?

>> KYLE HOYLMAN: I would just add that I think the elements of success in any state, not just Kentucky, is a strong coalition. But you need to have really consistent messaging that the coalition all buy into.

And then that method has to be consistently communicated to the right people. Whether it's a legislator, a policy maker. And then it becomes, well, what is that messaging.

So I tend to focus on what areas do I feel that we have the best opportunities to have the largest impact in preventing radon induced cancer incidents.

Today the policy landscape today would suggest that HUD -- HUD's public housing group with its demonstration project has a wonderful opportunity to have a large impact, not just in Kentucky but nationally. So I'm interested to see that program come together.

I'm interested to see the military housing program come together. I'm interested in seeing the lending policy continue to come together. That's where we see testing requirements, mitigation requirements and really the majority of opportunity, in my opinion, is within those segments that have the largest impact on affordable housing and health equity.

>> SARAH DOWNER: I've heard a number of interesting things. One is really leveraging these Federal policies to make change in the state and making sure those have their full impact on all of the populations affected.

From Shannon we heard about the importance of maybe changing the messenger. Maybe it's teachers now who come to the table around radon and then changing the framing. So maybe we don't talk about it as a radon-specific issue, but it's a school safety issue entirely.

And then seeing if we can bring new energy to the table. And then from Stacy I think one of the things that we heard about was the importance of learning new areas. Stepping outside maybe your comfort zone and thinking I have to learn about housing because this is the frontier. And we're all a little bit uncomfortable out of the wheelhouse. But radon really does ask us, I think, asks us to step outside and do interdisciplinary work. So I'm so glad that you brought that really clearly to the table.

And then Clay talking about the important need for data and then applying that data in the conversations that are iterative. Right. So in a coalition you just keep talking and keep talking and then people come to the table when they're ready and action happens when they're ready. So being poised to sort of jump on that is really key.

And so, you know, we're at ten minutes to the close. I would love to just give everyone a chance to just do some brief remarks about what's one thing you would like attendees to walk away from this webinar knowing. Or what's one thing you would want them to walk away inspired to do.

So I'm going to turn it -- I'll let whoever wants to go first volunteer and then we'll turn it over to the next person.

>> SHANNON BAKER: Glad to volunteer. I hope everyone listening today has grown in their understanding of radon and the risks associated with it and is excited to do something to advance radon policy in Kentucky and across the nation, in fact.

And so I'm going to say thanks to Stacy for mentioning earlier our radon education program called Radon Basics. I encourage everyone to go to lung.org and there is a ton of information about radon on the website. And that Radon Basics course available to everyone is a tool that you can use in your conversations and your efforts going forward. And you have the opportunity as well to join as the volunteer advocate for the lung association to have your voice heard in the radon policy space.

>> KYLE HOYLMAN: I will tag into Shannon's response and just suggest that if you are ready to take action and move forward with policy, form a coalition. Make sure it's a strong coalition. Make sure you have the right stakeholders at the table.

And, again, consistent messaging. Consistent communication to the right groups. That's the key to success in my opinion.

One item that I'll add as a resource to the materials that Stacy mentioned are fantastic from a health care education. Seeing a lot of chat and Q&A on resources.

Another wonderful resource is published by CRCPD. I won't get -- it's an acronym for the state radon program council for radiation program directors. And they recently updated and published their health care guide. So that's a good companion to use with some of the materials that Stacy referenced as well. And I'll get you that link so that you can provide that.

>> CLAY HARDWICK: Okay. It's hard to add to all of that. Really there's really not a whole lot more I can add in here. But I just think -- I have to come back to the coalition again. And I mentioned at the beginning that you want to -- you want to make the most of that in every way you can.

And we have a commonality there in cancer prevention. So there's -- if we work together there, we're going to find kind of new ideas and things to work from as far as policy goes.

And I have to kind of -- you know, as the state person, I can't -- I'm limited in doing any kind of advocacy. So there's -- it's just critical that I get involved in consortiums and things like that where people that are here on this panel today that they can get -- we can work together towards policy. And I'm kind of indirect obviously in that role. But it's just real important that we maintain our consistency, as Kyle put it. Maintain our consistency. We can do that through our action plan.

>> STACY STANIFER: And I think as a health care provider, I would just encourage anyone else who is a health care provider on the call to really use those teachable moments.

So think of like when you're taking your health history of the patient or when you're providing tobacco cessation counseling or you're having that informed decision making visit when you're discussing lung cancer screening, use those as opportunities to ask your patients if they've tested their home for radon and then making that recommendation.

And you can use those interactive maps shown earlier to highlight your area where you live and include those as a discussion for radon risk potential. And then you can refer them to the state radon program so they can get their free home radon test kits. They can get those at no cost to get their home tested.

>> SARAH DOWNER: Thank you so much to all of our panelists.
Fantastic closing thoughts.

And what we wanted to make sure to say to everyone on the call is that we will have a Kentucky-focused discussion next week. So we want to take all of the thoughts and things that have been thrown out there today and turn them into action.

And so this next conversation is about concrete next steps. What do we do. How do we advance things. What do all of our experts want to come together on and around. Some of that shared unified messaging that was referred to here today.

So we encourage folks to go ahead and register for that. I believe Murlean has put that into the chat. So you can register there.

I also want to just call out one of our active Q&A participants. Nathaniel has been putting a lot of great suggestions into the chat about programs in Pennsylvania and other suggestions. So we'll make sure that we're capturing anything that gets put into the Q&A or chat as resources that we can share around with the attendees here today.

But, again, enormous thank you and so much gratitude to all of our panelists based here in Kentucky, and Kristian for bringing this conversation together and sharing your thoughts and all of the work you're doing to really change things on the ground for people in Kentucky. We so appreciate it and are inspired by it.

And with that, I'm going to close it out. And we hope that you have a fantastic rest of your day. Thank you.