

EPA

Moderator: Bob Axelrad

June 25, 2013

1:00 p.m. EST

Bob Axelrad: Welcome, everyone. Sorry for the couple of minute delay. We were waiting for some of the participants to join the call and get connected to both the audio and the computer.

Thanks very much for joining today's Webinar, "Building on ENERGY STAR, stepping Up to EPA's Indoor airPLUS Label". My name is Bob Axelrad, I'm with the Indoor Environments Division at EPA.

I'm joined here by James Ball who is with the Cadmus Group which is an EPA contractor supporting the Indoor airPLUS program. We're fortunate to have James with us. James is really our technical expert. He is a former rater. He also worked for Habitat for Humanity of Central Arizona for five years so he has experience both building as well as rating homes for various programs including ENERGY STAR and Indoor airPLUS.

Couple of quick housekeeping items before we dive into this. The first of those is to just familiarize folks with the technology. I think probably most of you are familiar with it. There are just a couple of controls for the participants. There is the orange box with the arrow that allows you to hide or open the control toolbar.

You'll probably want to have it open for the chat feature. There's a box below that lets you maximize the slide presentation to full screen and a question/chat feature that you'll use to ask questions throughout the Webinar.

What we're going to do, because we are slated to have about two hundred people on the call, we are going to keep all of the phone lines muted and we're going to ask that people submit their questions through the question and chat box. Please submit them as you think of them.

We will reserve about 15 minutes at the end to make sure we get through as many questions as possible. We'll also answer some using the chat feature as we go along. For those that we don't get to during the Webinar itself we'll follow up and respond directly to each of you for questions that we weren't able to address on the call.

We'd like to start with two simple polling questions just so everyone sort of has a good feel for who we have on the call and the degree of familiarity with Indoor airPLUS. (Marquis) would you please open the first polling question?

All right. If you guys could just take a couple of seconds we'll just leave this open for about ten seconds.

All right, three, two, one. (Marquis), would you go ahead and close that and display the results, please?

All right, so we have a pretty even mix. A lot of builders, a lot of raters, some government folks and about a fifth of "other". So good audience, good mix of folks. So let's open up the second one if you would, (Marquis).

All right, three, two, one. Would you go ahead and close that, (Marquis), and display the results, please?

All right, so about half are really new to the program. There are a pretty good number who are pretty familiar who want to join and also about a quarter who are already familiar and members or partners with Indoor airPLUS and want to get updated information. So that's great. Excited to see that mix of folks here. Go ahead and close that, (Marquis), and let's jump in here.

What we're going to try to do in the next 50 minutes is really a pretty efficient run through of Indoor airPLUS. I'm going to do a little bit of an overview of the program itself, in particular how it relates to the ENERGY STAR

program as well as some of the things that we've done recently to bring Indoor airPLUS into greater alignment with ENERGY STAR and to really streamline requirements.

Then I'm going to hand it over to James and he's going to go through the components of the program and talk about how Indoor airPLUS features address the key indoor air quality issues that we're concerned about. He is going to go through all the requirements on how to attain the Indoor airPLUS label, he'll talk about how Indoor airPLUS can offer your business additional customers and additional lines of revenue. And then we'll answer questions and try to get everybody equipped so they can take the next steps.

So jumping in, and many of you may know this, but about half of you, apparently, are not too familiar with Indoor airPLUS, it is a label program run by EPA that's designed to add health protections to your ENERGY STAR value proposition. It is, in fact, a companion label to the ENERGY STAR label. Both of these labels are voluntary programs. ENERGY STAR is, in fact, a prerequisite for attaining the Indoor airPLUS label and we'll talk a little bit about why that is in the next slide.

ENERGY STAR has been around for quite a number of years and has made tremendous progress penetrating the market and getting many homes built to the ENERGY STAR certification. Indoor airPLUS, on the other hand, is a relatively new program that only was launched in 2009 with unfortunate timing. That was immediately after the crash of the housing market. And so we are really a program that is just in its early development stages, it turns out, creating awareness and market penetration.

So here's how ENERGY STAR and Indoor airPLUS go together. For those of you who have a lot of familiarity with ENERGY STAR you're aware that not too long ago version three came out and version three was a significant step up in terms of the requirements that were integrated into the ENERGY STAR program. And the reason was that, in essence, as you tighten up the homes, it was really critical for ENERGY STAR to add durability to the proposition of ENERGY STAR homes. It made no sense for them to offer energy efficient homes that might have moisture problems.

So one of the things that they did was integrate some of the key protections that the Indoor airPLUS program had when it was launched in 2009, particularly the water management checklist and a variety of ventilation related requirements like mechanical ventilation. And then ENERGY STAR also adds some really critical details that made sure that some of the indoor air requirements like attaining ASHRAE 62 compliance, were actually being met by insuring that HVAC installation was done in a quality manner and verified in all of its details.

So we see the ENERGY STAR version three as a really tremendous foundation on which to build Indoor airPLUS, and the graphic below kind of shows how ENERGY STAR addresses building envelope issues, it addresses HVAC issues, it now has a lot of moisture issues in it and it does quite a lot to protect against carbon monoxide and other combustion gases.

Because so many of the elements of Indoor airPLUS were already incorporated into ENERGY STAR, now Indoor airPLUS has a relatively modest set of additional requirements that address building materials and natural pollutants like radon, plus add some additional details around HVAC, moisture, pest barriers, and CO protection.

So between the foundation that ENERGY STAR has established in terms of building science and addressing some of these key issues around moisture and HVAC, you add the Indoor airPLUS protections and you have a really complete indoor air quality package.

So the programs have intentionally done their best to make sure that they could be, the requirements for both programs could be met simultaneously and so both programs are reported simultaneously. Verification can be completed during the same two visits of the ENERGY STAR inspection process. And Indoor airPLUS can utilize the sampling protocol provided they are working with a sampling provider and using the RESNET-approved sampling protocol.

We get questions about multifamily dwellings. While Indoor airPLUS was not designed primarily for multifamily

dwelling we do allow multifamily dwellings, particularly low-rise, to attain the label provided they can meet all of the Indoor airPLUS requirements. There are a few specific requirements around compartmentalization. Making sure that you don't have pollutant transport between units and nonsmoking policies that are required.

Existing homes, we get a lot of questions about whether or not the label is available for existing homes. We did not design Indoor airPLUS to deal with existing homes.

Many of the features required for Indoor airPLUS and to assure that new construction is up to standards that we think are sufficient are hard to verify in existing homes. So we don't generally offer the label for an existing home.

There have been efforts on the part of ENERGY STAR to increase the number of existing homes that could meet the ENERGY STAR requirements and the Indoor airPLUS requirements are also being considered in that regard.

But now ENERGY STAR has specific alternate pathways for certain aspects of rehabs that if met could allow more homes to attain ENERGY STAR certification. And there is a recent policy record up on the ENERGY STAR Website for folks who want to look at the details of that.

However, for most of the renovation and energy upgrade work with respect to indoor air quality, we do not offer a label program, but we do have comprehensive guidance that we have developed in concert with the Department of Energy called "The Healthy Indoor Environment Protocols for Home Energy Upgrades".

And so, while not a label that can be placed on a rehab structure, these are nevertheless the right protocols for doing assessments of existing homes to make sure that any energy retrofit or other work that you are contemplating will not increase indoor air quality (problems) and it provides very specific recommendations for how to prevent problems from occurring and to take advantage of opportunities to fix issues that may be found during assessment.

So our revision one of the Indoor airPLUS specifications, we're still on version one, revision one. Revision one was released in February of this year.

Really, this was the first time that we really took a close, hard look in concert with the ENERGY STAR homes team to really figure out the details of the requirements of ENERGY STAR certification and the Indoor airPLUS requirements and to make sure that we could separate those out and be very clear for builders and raters as to what exactly was required by each.

So what we released in February, there's a new checklist, there's a new way of displaying the requirements and the pieces of the program and we're going to encourage folks to look at them and use them immediately.

We're also continuing to receive feedback from builders and raters both on the original program and some of the new features. We expect that we're going to be doing similar updates to how ENERGY STAR manages the process and that is to develop policy record information and guidance that will come out, and in some cases, specifically change program requirements and we're actually working on some now that may be out in the next several weeks.

The main difference is with revision one is that we really aligned with the ENERGY STAR version three requirements in a much clearer way. And we made much simpler a lot of the specifications and in particular made it clear where there are opportunities for alternate pathways. As there's more flexibility, there are more climate specific exemptions in revision one.

What we've done to lay this out and make it easier for builders and raters to use is we've really separated out the elements in the specification.

They're already addressed by completion of the ENERGY STAR checklist and the ENERGY STAR checklist are required as a foundation for Indoor airPLUS and so you will see at the beginning of each section where Indoor airPLUS notes the ENERGY STAR checklist, meeting specific requirements that are, and were, in Indoor airPLUS.

And then only those additional Indoor airPLUS requirements, exceptions, advisories, and other pertinent information that actually are still relevant over and above the ENERGY STAR guidelines are displayed. So it makes it much easier for folks to see what they've already accomplished by virtue of doing the ENERGY STAR program, and how few the additional requirements are in order to step up to Indoor airPLUS.

There are a few that, in some instances, where requirements that we have in the program exclude some ENERGY STAR elements. For example, use of building cavities in the HVAC supply return system.

So the checklist looks like this. It's still one page. In fact, it's shorter than it was before because beyond adding the ENERGY STAR checklists into the Indoor airPLUS checklist itself, we've left the numbering from the original Indoor airPLUS program, but only those elements that are over and above ENERGY STAR are listed.

So in order to verify an Indoor airPLUS home, you really only have to go through a handful of checklist items and make sure that those are being met. So, in truth, it's a much simpler step up than it was back before the revision one program came out.

So I'm going to turn this over to James now and he's going to take it from here and talk about indoor air quality and the actual requirements.

James Ball: Great. Thank you, Bob.

I am really excited to talk about this program today, especially seeing how many new names and organizations we have on the call. I want to reiterate what Bob was saying about this program being such an easy step up; this is such a close companion to ENERGY STAR.

I know there are a lot of certification programs out there, this one's close to my heart and lungs, not just because I work on it, but when I was in Arizona building homes and certifying them, I identified that this issue of indoor air quality is really a tremendous opportunity for our industry to step up to and really increase the value of our product and increase the amount of homes that we are building and selling.

And to frame that, I was introduced to the topic of indoor air quality through the study of green building. And since coming here and having some other experiences directly with people that have asthma that are affected by this issue of indoor air quality, I realize it's really its own kind of category under that green building umbrella that has a very strong visceral and physical connection to the people that it affects.

So we'll talk about a lot of the kind of statistics around this issue, but I just wanted to start off with saying I think it's almost more of an emotional issue for many people when it comes to the quality of the air that they're breathing.

What causes that low quality air? Well, of course, it's pollution sources. And we know that no matter how hard we try, the homes we build will always have some sources of pollution if it's none other than little Jimmy walking in with his shoes dirty.

So the source is the primary concern and then really inherently tied to that is the need for ventilation. And, of course, we talk about that a lot with ENERGY STAR, but really when we talk about air quality it becomes a primary focus of how to address these issues.

So the health risks that we are exposed to in our homes are, unfortunately, quite plentiful. And they can be exposed to us at times that we don't know and, in fact, we might not see the symptoms of those exposures until much, much later. So the solution we have here is certainly one that is attempting to prevent these risks from ever really existing or being exposed to in the first place.

And here's a list of those, we'll get into these in detail so don't be distracted by the acronyms here, but just wanted to convey that these health risks come from many different areas. Some of them are inside of the home and are basically created through homeowner lifestyle, such as tobacco smoke.

Others are outside, naturally occurring like radon that is just a natural part of our environment, and others are created by certain conditions like moisture allowing for mold growth that we can control in terms of our building practice. So as we hear so often, certainly the home is a system and in terms of addressing the health risks, we need to think about them (in a systems approach) to comprehensively address them.

And we can boil that down to a fairly simple three steps here. The first is to control the source. And, again, since we can't always eliminate it, when not possible to reduce or eliminate, then we want to quarantine it, if you will, or contain it so it's not being exposed to the occupants. Then we can ventilate to either attempt to remove that pollutant once it's been released or to dilute the air in the home so that the density of that pollutant is lowered with fresh outdoor air. And lastly, of course, we can use filters to clean that air and reduce the amount of particulates.

So that very simple one, two, three step really pertains to all of these different issues or risks that affect our health. One of the many benefits of the Indoor airPLUS program, certainly, is it's just a tremendous resource and guide for you raters, builders, and designers to know about and understand the issues and how they interrelate and what features we need to put into our homes to address them. And then, of course, we get the recognized label and the opportunity to market this to our home buyers.

So let's jump in here. We'll start going through these features. I will be moving quickly, but please feel free to ask questions through the chat and question interface and any technical questions that we are not able to address we can try and handle at the end, or the lines are always open.

Our e-mail will be at the end and is a continual resource to you as you go out and start building these homes to address any technical questions that come up then as well. So this is certainly not the last chance to be learning about the technical requirements of this program.

And before I get into that, I know this is a question on everybody's mind it's probably the number one question so I thought I'd put this right up front here and address the question of cost. As an EPA program it is free for you to participate, to go on, to sign up as a partner, download the resources that are all available to you today for no cost. Raters will, of course, know that there will be a verification fee they'll need to charge and, of course, that will be unique to each company that you work with.

And in terms of the actual features, the best we can really provide to you is to say there is a range and it would be largely dependent upon the features in that home, the issues that you need to address, and some major factors are going to be whether you are in radon Zone 1 or not, as well as what climate zone, if you have to deal with the humidity and moisture issues that come with a healthy home.

So that range could be anywhere from a few hundred dollars, most likely in a dry, hot climate that's not radon Zone 1, to a few thousand if you are not already, and need to step up to installing a radon mitigation system as well as addressing humidity in the home. So, hopefully that gives a little bit of a framework for those that are looking at that bottom line first and foremost.

So issue one of a healthy home is water, and probably no surprise to you here at that. We know moisture is a major source of decay of the durability of the home and that affects the comfort and the health of the occupants on its own as a moisture issue.

But then, of course, the fact that mold and mildew is able to grow in those moist conditions, in fact, also pests are attracted to them which is another source of allergen issues and this topic of asthma is really enough of a poignant one to stand on its own, that twenty percent of households, one in five households have someone living in it with asthma and we know that these damp homes are significantly increasing the risk of those symptoms.

So we have a solution to help those, again, the large population of people dealing with asthma, in the way that we build our houses.

And we start at the foundation. We're going to work through the components of the home here. ENERGY STAR does a great job of controlling that runoff as well as the draining of the site. For an Indoor airPLUS home you would additionally need to install a drain in below grade basements or crawl spaces. There are some additional exemptions here, so look into the construction specifications for more detail.

The capillary break under the slab which ENERGY STAR requires is only polyethylene. Indoor airPLUS requires an additional aggregate layer underneath that polyethylene which is just a further assurance to make sure that moisture, liquid water, as well as soil gases are not being pressured and forced up through that polyethylene and through the slab and into the living space.

So that aggregate layer is a free moving zone, if you will, beneath the polyethylene where, again, harmful gases, including radon and in this case the moisture, the vapors, can move freely and not into the house.

Here's a quick illustration of what that looks like and there's a lot of these illustrations on the Website. We'll be putting more training materials up, so definitely stay tuned for some good useful demonstrations of what these features look like.

To continue on with the foundation, Indoor airPLUS homes all have sealed non-vented crawlspaces and basements. And this is related, again, to keeping moisture and humidity away from the foundation, outside of our envelope which we are extending into those below grade foundation walls and sealing it to make sure that that humidity's not getting in and then being carried up into the house.

Again, we're talking generally here. You'll get the specifics of this in the construction specifications themselves, but that's the concept behind why we want to do unvented crawlspaces on healthy homes.

The wall drainage system is comprehensively covered in ENERGY STAR. The only additional step up for Indoor airPLUS is that ENERGY STAR homes that do not have gutters installed, and for those familiar with the program there are a couple exemptions for not installing gutters, Indoor airPLUS is concerned that rainwater dripping next to the foundation will splash and wet the bottom of that foundation and, again, potentially soak through causing mold and mildew concerns.

So splash protection is part of the Indoor airPLUS program and can be accomplished in a number of ways including extending the foundation wall 16 inches above grade, or, my preferred solution, is actually just extending that roofline out so that your drip line is 16 inches horizontally away from the foundation.

And, again, this is just keeping our water away from that foundation area, making sure it's draining off the site and away from the inside of the home.

We do a lot to keep the moisture out, but we certainly know that there are some areas of the home that are just highly susceptible to moisture. And Indoor airPLUS requires that those rooms inside of the house, including the kitchens, bathrooms, entries, laundry rooms, and utility rooms, only have moisture resistant hard surface flooring.

And that expands on the two foot requirement that ENERGY STAR has, to the whole room. Additionally in exterior wall piping, whether hot or cold, but not drain lines, need to be insulated. And this is for the issue of condensation that can occur on those pipes and then expose cellulosic materials or wood, again, creating moisture and eventually mold concerns in the walls.

So to recap that section quickly on the benefits we are adding with these features to our homes, is we're improving the long term durability of the structures. These additional protections of moisture are going to lead to long term savings in terms of the upkeep of this home.

Additionally, the more common and daily maintenance of the home can also be reduced through less peeling paint and mold that, again, can occur in those wet areas of the house.

And, most importantly, and you'll see this kind of commonality of the theme of benefits between long term durability, continued maintenance reduction, and lastly and most importantly, is the health effects. Reducing that mold growth, reducing the asthma and allergen triggers that are created with moisture.

So we are moving into the radon section and for those not familiar with radon, this is a tremendous issue that EPA is paying a lot of attention to. Twenty thousand people die every year in the United States from radon exposure.

Radon's a naturally occurring radioactive gas that is created when uranium decays in the ground and it exists in very low quantities in the outdoor air, but when we build homes in sites that have radon in the soil the house actually serves as a trap that that radon gas can get sucked into and accumulate to a level that can cause lung cancer, that do cause lung cancer and is the second leading cause of lung cancer next to smoking. So a huge health impact here and the solution is readily available.

For those not familiar already with this map, this shows the areas of the United States that have the highest exposure of radon highlighted as Zone 1 in the red and going down to 2 and 3. If you're in one of those areas that is red that is where EPA asks that you install a passive system, this is the current requirement.

And the advisory is to install an active system in Zone 1 as well as a passive system in Zones 2 and 3. But for the requirements of the program only a passive system is required in Zone 1.

And what that looks like is it's the aggregate layer underneath our slab. We're installing a vent pipe that connects to that aggregate layer going through the home and outside of the roof and needs to only have an electrical outlet installed near that vent pipe in the attic to install a fan, eventually, if needed. And the fan is what makes that an active system.

So, again, this is not required for Indoor airPLUS. Advised, but for this program you only need to install that outlet so that the homeowner can later install a fan if needed to mitigate that radon. And the benefits here are certainly simple and easy enough to see - hat we are able to cost effectively, when first constructing a home, protect against the second leading cause of lung cancer in the United States.

Our third category is pest barriers and I like my next slide here. No need to provide extensive facts around why we keep pests out of the home. Certainly anyone would agree these nasty various critters that can creep and crawl are best left in the outdoors.

But not to understate that beyond the creepy crawliness, the health impact of these pests, of dust mites, of droppings is again, a significant and known trigger for asthma and allergens.

So the air sealing we do as part of ENERGY STAR is certainly a great step towards keeping those pests out of the home. Indoor airPLUS requires additionally that all vent openings, the one exemption here is for your dryer vent, be sealed or have a steel mesh on them that will keep the rodents and birds out of those ventilation openings.

Again, the benefit list here is that we are reducing the long term damage from termites, etc., we're keeping less daily maintenance of the house in terms of keeping those pests out and also reducing those triggers that can cause respiratory irritation.

The fourth section is HVAC and, again, emphasis on the "V" for ventilation. The main area that Indoor airPLUS steps up from ENERGY STAR is to deal with humidity in the home, for the reasons we've already discussed, to make sure that the ductwork is not moving pollutants from one area of the house into the living space, and also the filtration, that our HVAC system can assist with in terms of improving air quality.

So the first requirement is that in warm and humid climates you must install dehumidification equipment that can sufficiently keep the relative humidity below 60 percent. On this map you will see that the area below the white line is the mark for those warm, humid climates.

And the equipment you use to meet that dehumidification need is not specified. It can either be an integrated part of the central HVAC or it can be a standalone system. So you have the freedom to determine the best approach for keeping that humidity below the level that we know is where mold can start to occur.

Again, going back to the location of the ductwork, it's important to keep the forced air system, return and supply, outside of the walls and away from the garage. Those are areas we know have pollutants and contaminants and we don't want leakage to be pulling that contaminated air into the ductwork and moving into the living areas.

Also, during the construction process we want to make sure that pollutants are not getting into the ducts and later being released once the occupant has moved in. That can be most cost effectively done by covering up the ducts as soon as they are roughed in.

So that can be done by the HVAC contractor, by the builder or, eventually, even the cleaning crew to keep those ducts covered so pollutants are not getting in and then we will later on in commissioning be making sure that they are substantially clean before that occupant moves in.

Here are a couple images on this next slide as to what that can look like. There are some ready bought products as well as certainly you could makeshift your own.

This area is actually just an advisory. No additional requirements in regard to whole house ventilation. But we do advise that when bringing an outdoor air duct directly into the return side of your air handler that you make sure the temperatures that are going to come in through that supply duct are within the manufacturers recommendations for that return air temperature. If those are outside of the recommendations there can be some issues with the durability of your coils.

The filtration is one step up. ENERGY STAR requires a MERV rating of six on filters. If you're not familiar with the MERV system that stands for the Minimum Efficiency Reporting Value and Indoor airPLUS requires a level eight on that scale which is improving the amount of particulates that the filter is able to keep out of the air.

And again, on the list of benefits here, we're looking at reducing the exposure to mold and mildew by reducing the amount of humidity in the air. We're also just keeping the house more comfortable by controlling that humidity. So our benefits list certainly extends beyond health to the comfort and quality of life of the occupants as well; and also improving the long term durability and the overall cleanliness of the house from day to day.

The fifth category deals with the combustion pollutants that can exist in the home, in all houses, but especially in homes that have combustion appliances and attached garages. And to just highlight one of those, there are many combustion pollutants that are byproducts of the combustion process, but carbon monoxide is certainly one of the top in terms of public awareness as well as the potentially lethal impact of it. So to help control that, Indoor airPLUS has a number of requirements.

Again, I won't get into the details of the specifications that are referred to, but sufficient to say that there are a number of great programs out there, ASHRAE included, that have standards for how to effectively ventilate and make sure that those combustion byproducts are not leaking or back drafting into the house. So the general idea, of course, is to ventilate directly when possible and there are a number of different compliance pathways within the construction specifications to meet that.

The next slide will show a few examples of what those properly ventilated combustion appliances look like. And as we know since any equipment or appliance can fail or have its issues, as a secondary level of protection carbon monoxide detectors are also required to be installed in a central area.

To mention the multifamily requirements; those are to add additional air sealing to prevent movement of pollutants between units, so compartmentalization is another way to say that, as well as some smoking requirements on where the occupants are allowed to smoke in regards to proximity to the entrance.



The attached garage is an issue that we are looking closely at. And the program right now is requiring that the attached garages have an exhaust fan installed that will actively be moving air out of the garage.

And there are a lot of pollution sources we know in there including the car exhaust as well as the common paints and fuels that we like to store in our garage, so we want to keep those pollutants both from entering the house, by inducing a negative pressure with that exhaust fan, as well as just keeping the level of pollutants within the garage space lower by diluting that air with the outside air exchange that the fan will induce.

There were some slight changes here with revision one and we are additionally listening to and responding to industry feedback about this issue.

Again, some good illustrations of what those garage pollutants are and how they can seep into the home. And the benefits here is really the peace of mind for your homeowner to know that they do not need to be concerned with that car's exhaust getting into their sleeping area. You're also increasing the usability of that garage by keeping the pollutants lower within it and protecting people from an odorless, invisible, lethal gas that they could be exposed to.

The sixth and second to last category here is the materials we install in our home. Again, we know that these materials do have contaminants within them including VOCs or Volatile Organic Compounds. So the Indoor airPLUS program, again, uses third party organizations to point to similar to combustion appliances; that recognize materials that have the recommended lower levels of VOCs.

So the wood is one area of that, specifically in regards to the content of urea-formaldehyde. Also paints and finishes. And, again, there are some great labeling programs out there with many available options on how to meet the requirements of low VOC paint and finishes. And also the carpet and carpet pad as well as adhesives.

So our benefits here is, unfortunately, we kind of misunderstand that "new" smell, that is really a chemical smell and we'll be reducing that first exposure to that off gassing of the VOCs and reducing the health effects that come with it.

Our last category is the commissioning of the system and the cleanliness of the home before turning it over to the homeowner. We want to make sure, since we covered the ductwork, that it has maintained being clean and dry throughout construction.

That is a visual inspection to be done as well as verifying that the coils are clean once the HVAC system has been started up. Also to help accelerate the off gassing of the materials we've installed, we want to ventilate the home before it's turned over to the homeowner.

Again, you have some leniency on how this is accomplished. It could be just opening windows and flushing the house passively or also running that HVAC system to actively move air outside of the house.

And once you've done all of that, to brag about the accomplishments that you've installed into this home as well as to pass on that information so that the homeowner can continue to operate and maintain their home in a healthy way, information should be provided to them about all the Indoor airPLUS features of their house.

So that concludes the list of features of the program. I'm going to keep moving quickly here since we're getting to the end of our time. I wanted to talk quickly about a value proposition and the benefits that Indoor airPLUS can bring to your business.

And first and foremost, of course, goes back to that bottom line. We want to be able to, by adding these features to our homes, have the consumer recognize that value that's been incorporated into this house and be willing to pay a premium for it.

And I'm intimately familiar with the problems and issues that we have in terms of having the appraisal industry recognize a lot of these items, but I want to put an optimistic spin on it that the Indoor airPLUS program is a great

opportunity for us to achieve what, unfortunately, it would seem, ENERGY STAR has not.

And that is that the appraisal industry is only able to recognize an increased value to a certification program when they have comparison properties that show that that home with that label was sold for more than its counterpart that did not have a label. So that's a pretty basic concept of how an appraiser determines the value.

And so it's only, I state that to encourage you all, all the builders on the line, to, when you do put this program out and are selling it to your homeowners, if you can get the premium on the first homes you build you can present that as evidence to your appraiser on the next home to say, "Hey. This home sold for more and here's why. Here's the Indoor airPLUS program, here's the list of features in this house." And we can really almost force, strongly encourage, those appraisers to recognize what this program is bringing in terms of financial benefit to those homeowners. So it's going to be a long, arduous fight, but we have a great opportunity here to get that additional appraised value for these features.

Beyond the value is the health messaging, I feel, is just a great opportunity to grow the market. We know the top reasons why homeowners are looking for homes in terms of location, floor plan, and price, but again, to go back to that emotional quality that the topic of health has, I think we have a great opportunity here to really market the new home industry as an opportunity to improve health.

That a home buying decision should be a health decision. And if we can get that message out to home buyers I think we might find that people really start to consider their housing choices as part of their lifestyle health choices. And that could really bring a lot of momentum that we're already seeing in terms of new home building and sales.

And within the competitive industry that we're in this is also, as a new program, a great way to differentiate yourselves from your competitors and all of you on the line today are already further equipped and leading the industry in terms of being knowledgeable about this program and ready to incorporate it.

So I encourage you to do it first and do it loud and get that benefit of leadership that you can take away from today's Webinar.

And lastly, too, wrapping up the kind of value proposition here is that certainly adding the statement of health protection to your business model is a great way to improve that reputation. We hear so many really powerful stories from people that have moved into Indoor airPLUS homes talking about the improved living conditions and health, quality of life that they experienced and we know that's the kind of feedback that creates advocates and really loyal customers for businesses such as yourselves.

And to flip that coin on the other side is if you don't want to go towards that good reputation, certainly on the other side is avoid a bad reputation. So the additional protection, the additional details and verification that go into the Indoor airPLUS program are definitely going to reduce the errors and mistakes as well as risk that exists any time that we build a structure.

So please go online. Here is the Website, we're putting it on the last slide for you to sign up as a partner and start to benefit from all of the resources, free training, promotional materials including a mobile app that the Indoor airPLUS program has developed for all of you to benefit from the program. You'll be able to start using that mark and that logo right away on your materials and we have a nice set of guidelines for you on exactly how to effectively and correctly promote that mark and start to talk to people about this new message.

So please, go onto the Website, log on and become a partner. As I said at the beginning, please don't let today be the last time you engage with us. We really appreciate your ongoing feedback and questions about the program and are certainly willing to help along the way as we know there are unique situations that come up under every home and we're here to assist in that process and make sure that all your questions are answered.

So I know Bob's been responding to some questions that have been coming in through the interface. We're down to less than ten minutes here, but if we do have any questions that we'd like to ask over the audio I'd be happy to

answer those now.

Bob Axelrad: This is Bob Axelrad. We've answered most of the questions. There are only a couple that have come in. Please enter any additional ones that you might want to ask.

One question that's just come in is "Has ENERGY STAR completed any testing to determine any energy savings increases for Indoor airPLUS compared to that of a basic ENERGY STAR certified home?" I know that ENERGY STAR has not. It is probably something that the Indoor airPLUS program should contemplate undertaking at some point in the future. There are certainly some additional research needs related to the technical requirements for the program, but at this point the answer would be no, we don't have any information on that.

Another question that we got is whether or not you can get a copy of the slides. We are recording the Webinar, there will be an audio recording. It will be available as an encore presentation, we'll also have an mp3 file and we will post the slides on the Website along with the audio files probably in the next couple of weeks.

James Ball: If you sign up as a partner, again, you'll also be receiving our regular updates in terms of additional Webinars and further training that we will be providing. A lot of new information that we are developing, I think, will be really helpful to those that are both implementing the program as well as just want to be knowledgeable about the issues of indoor air quality. So connecting as a partner will get you on that mailing list and we'll keep you informed.

Bob Axelrad: Another question, maybe James, that you could do. "Are you requiring Indoor airPLUS houses to have the air ducts cleaned before being occupied?"

James Ball: That's a great question. So it is not a requirement that they have to be cleaned before it's moved in. It is a requirement they need to be clean before the homeowner moves in. And that can be accomplished in one of two ways.

The first is as we described covering up the duct openings during construction to make sure no particulates or pollutants are getting into the ductwork, removing those covers right before your trim is installed, and then also visually verifying that that sealing was effective. If you did not cover your ducts during construction your alternative pathway there is to, yes, clean those ducts at the end of construction.

So there's two opportunities there. One is to keep them covered and the second is to do the cleaning at the end. Both of those pathways ask that someone visually verify that one of those two processes has occurred and been effective.

Bob Axelrad: All right. Another question. "I'm confused by ENERGY STAR requirements for an interior air barrier behind showers and tubs in climate zone 2B. Is there an exemption or are interior air barriers required?"

James Ball: I can't speak to the ENERGY STAR requirements there, but in regards to Indoor airPLUS we do not have a requirement in terms of the location of the air barrier. Only that in those moist areas that the drywall used is a non-paper-faced backer board that does not have the cellulosic content that typical gypsum does which is susceptible to mold growth. So the non-paper-faced which is usually, therefore, a fiberglass-based board is required in those wet areas so that they, when wet, will not grow mold.

Bob Axelrad: I think we're down to about two minutes and we do want to end promptly. There are some additional questions that have come in. We will take each of those questions and we will develop a response. We have your contact information. We will be sure to get back with you and answer those questions for you.

Just if you'll bear with us for one more minute we want to just put up two quick polling questions. (Marquis), could you put up the first one, please?

All right, if you would give us your thoughts on this that would be great. As James said and we've discussed we are continuing to really try to listen to builder and rater feedback here. Try to figure out the best way to help all of you

move forward with this program. A couple of more seconds.

If you would close that, please, (Marquis).

All right, the awareness issue is clearly top of the list, something we're going to work on and have several different plans to try to proceed with. So, (Marquis), would you just open the last one?

We'll take a couple more seconds. All right, (Marquis), if you would close that one, please.

This is good. Half are more likely to become a partner. Only a tiny fraction are less likely. A good percentage are already a partner and there's still some that need more information. So this is great.

We really appreciate you taking the time today, we know you're all really busy. We will have the recordings and slides up on the Website within the next two weeks. Please try to sign up as a partner. We'll be sending updates, there'll be additional Webinars, for example, on how to rate Indoor airPLUS homes and be looking for policy record improvements and additional changes and revisions to the program coming up.

So with that I'm going to close the Webinar and thank you all again for participating.