



## Q&A Summary: Home Performance Counts: Virtual Green Home Tour

Villa Bilancia, Pebble Beach, Calif., November 18, 2021

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### Q: Do you feel homeowners are connecting the concept of health and wellness to their homes?

**JC:** Absolutely. I think, as awful as the pandemic has been, it's launched the dialogue and wellness into the forefront. We've solved the energy crisis. It's now time to really solve the health crisis. And I think that consumers are very aware, and it's perfect timing to not just speak about air quality, but all the other important elements that go into building a home, because ultimately, the bottom line is we want to have longevity, we want to live long lives, we want to reduce our healthcare costs.

**SC:** So my optics may be a little bit different. Our business is partially multifamily, so we're dealing with the prism of the tenants themselves, and saying, 'hey, what does it feel like to live in a place that's built better versus not', and then the people that are buying and selling properties today - What can a healthy home do for them? So if you ask, just in terms of metrics and economics and motivation, how it impacts people, people are making rental, purchase, and disposition decisions based upon 'how I feel where I live'. And so healthy home means really everything, and we can see it going like this right now in the market across the country.

**BH:** The pandemic was an accelerator. You know, we were home. Traditionally when we were home and a room smelled bad, we'd go back to work and forget about it. But we couldn't forget about it. We had to be face-to-face with it. And we opened windows and found we felt better. And we bought air purifiers, and we found we felt better. So I think we have a significant change in consumer awareness.

### Q: What types of heating and cooling systems are in the house?

**BH:** This house is unique. It has a radiant heating and cooling system in the ceiling. So it uses hot water in the ceiling to heat and cool water. It's probably the highest level of heating and cooling in that there's no dust, there's no moving air, there's no pollution. It's a 15-minute response time, but any ventilation system that has filtration and has a fresh air ventilation system in it is a step up from the traditional systems in residential, which have no fresh air component.

### Q: Can you speak more about the types of building materials, the paints and the chemicals that are less toxic in the home, maybe for those who don't have the air purification system in the house?

**BH:** You know, we in the building material industry love our materials, but they have a lot of chemicals in them. Some have more, some have less.

So a simple step is to specify plywood, no OSB. That reduces a massive amount of chemicals. We think in volume and weight, and you think all the kitchen cabinets that go on a house, if you actually took them and laid them out - all the plywood - it's almost more plywood than in the house for the sheathing. So your selection of your cabinets is essential to reduce chemicals.



Trying to pick an insulation that doesn't bother you. Insulations have different smells, so you want to pick one that you're good with.

Low VOC paint, and then the sealants, sealants and caulking.

And we all have a budget to get to, so we focus on what I call the breathing envelope. What's inside the air tightness envelope that's going to be most impactful to the occupant and then spend your budget there first.

**JC:** You have to get the right envelope, and then focus on what you put into the envelope and how your system controls the envelope. We cannot get toxins out of the building industry. And if all you can afford is paint that has toxins in it, then it's even more important that you're able to understand what it means to have proper ventilation. And if you're in a rental situation, and you don't have proper ventilation, then having a 500 square foot air purifier can be a big help. Understanding that off gassing is everything, opening the windows, making sure you get air flow.

If you're fortunate enough to live in a new home that's high performing, again, try and look for anything that's low or no VOC, but some of the no VOCs don't hold up. So where there is a low VOC, it potentially is a bit better from a maintenance standpoint.

So it's a little complicated, and depending on the environment, the budget, there's different protocols and different strategies to help reduce the toxins in your environment. Every layer that there's a toxin present, timing your installation and allowing toxins to off gas before you bring another toxin into the environment because two toxins together is a whole other chemical reaction, and that's when it can be extremely detrimental.

Adhesives are another big issue with putting adhesives under flooring, adhesives under counters, and it really is a toxic chemical coming together as a cocktail that can be overwhelming.

Bill spoke in the video about body burdens, and you literally can have a blood test done to see what is in your blood. Often, it leads back to even what we eat. Many people have a very high content of mercury if they eat a lot of fish, but all of this is very important in understanding, bringing the labels into it, what we ingest, and the conversation is all connected. And it's not something that is just a one day, one month, or 12 months. It's an everyday, it's a behavioral strategy, and we really have to stay on it, not just within the building industry, but in our everyday lives and everything we do.

**Q: Have you seen a change in the client's interest level about health and wellness? We talked about COVID being an accelerator, but are people becoming savvier about what they're coming in asking for? Are they asking for health?**

**SC:** They are, and they actually have choices now that, you know, there's becoming a more common understanding. So there's awareness and dialogue about whether or not this is going to be good for my children, and perhaps we want to live here because we've heard it's healthy, or we don't because we've heard it's not.

I wouldn't say that we're at a point where there's complete clarity by all of the different people in that transaction chain, but I do think that people are... 'I don't think, I know'. On daily basis I experience people



saying, "Is this good for us?" and "How's this different than that?" So we're in that conversation and how we describe that, what you guys are brilliant at, is really the moment.

**JC:** And I also think, it's dollars and cents, isn't it? You know, if we can save money on the long haul by living our lives and conducting ourselves and making choices in a healthy manner, then it relieves the pocketbook. That certainly was how the energy movement got going in reducing costs and your monthly bills. And it's the same strategy with health and wellness - making sure that we help the consumer understand that the outcome is, again, longevity, but we also can reduce healthcare costs if we take into our own hands decisions that can affect, as I said earlier, body burdens.

**Q: A healthy home can be difficult to quantify. You generally can't say, "I have X of these" or "Y of these". How do you convey that added value to the rest of the transaction chain - the appraisers, the lenders - so that someone can get that value out of their home if they're going to resell a healthy home?**

**SC:** Great question, and multiple different ways. You know, my optics personally are a little different. I've got a background as a trial lawyer. I'm a broker. We build, we buy, we fix, we sell, and we care about the way we build. So we convey it by saying, look, there are two things that are going to happen here. This is built right, and you've got a loan against it, and your security is better off than it would be if somebody has to come in and rebuild it because it wasn't built right. Your exposure goes down, the cost of maintenance goes down. Or we're talking directly to the consumer, buyer and the seller, the tenant, the landlord, because we have management companies too, and we're saying, look, you're going to be able to have a tenant that's happier, and you're going to have less turnover, and there's an economic impact commercially on that, or somebody will sell this house faster, or it will trade for less. There are a lot of different elements to the economics of this beyond the emotion and the connection to the property.

**Q: Can you tell us how airtight it is – have you done blower door tests yet?**

**BH:** Yes, we did several. It's a Passive House certified house. We just actually finally finished the blower door tests. So it said 0.47 ACH. Passive House requires to be under 0.6, and code, as a reference, is five ACH in the lighter climates and three in the heavier climates. So this is a factor of plus 10 tighter than any code house.

And there's always the discussion, well, is it too tight? Well, actually, we're making houses tighter and tighter anyway, so it's not too tight, and we also don't want damp, wet air, polluted air leaking through the walls because that leads to a biology experiment.

So if we want to make it tight, how do we do it? Well, we train the trades to say we're building a balloon, and we focused on that air tightness level, and we use tape, and we use non-toxic adhesives to tighten it up. And some of the funny stories, you know, when we're getting to the final phase of the blower door test, there's still a bunch of air coming in. And where was it coming through? The conduits from the conduit boxes on the street. And I guarantee I don't want to smell that air in my house. But most houses that don't do this level of air tightness don't know that. It's tremendous savings in energy, and I think one of the points about healthy, durable, energy efficient - we need to combat climate change - when homes are healthy, they become energy efficient.

And 60% of the market cares about health, whereas a smaller percent of the market cares to spend extra money on energy efficiency. Most of the market cares to spend money on making their family healthier. And I



think as a builder, using that tool to grow your business and to be able to stand for that brand is super powerful in this post COVID era.

**Q: Can you talk more about the specific insulation choices that you made for the house?**

**BH:** We have a basic standard fiberglass insulation inside the walls. We value engineered down to that because when you make an airtight wall, the insulation performs more like a vacuum. So you don't need foam, which off gases. Then we have a layer of Rockwool banding the entire exterior, and that's how Passive House gets to an 80% reduction in the primary energy consumption. But our codes now require that continuous band, and when you have it, the house is simply more comfortable, and you can significantly downsize the HVAC system. So you have a lower cost there and can use that extra money to put in the ventilation and the right insulation. The last thing I'll say about good insulation is homes accumulate moisture where there are cold spots. So if there are gaps in the insulation, that's where you may get mold. So a really a good risk mitigation tool is to have a proper envelope.

The interior walls are standard low formaldehyde fiberglass insulation, and then we've added the Rockwool as a continuous wrap over the top and under the slab. Not Rockwool under the slab, you have to use more of a rigid foam that can withstand the compression, but by insulating all the way around, that's how you get to almost no energy consumption inside.

Also, we did spend a little more money on paperless sheet rock, and that's really a key step. And during the construction, we had a window blow open, and we had water come in. We had no mold because there was no paper behind that sheet rock. So from my perspective, that is a must-do in homes because stuff leaks, let's face it. It happens over time. And if you've got the paperless sheet rock, you're in much better shape.

**Q: You are striving for a net zero energy home and as you mentioned, it has been modeled and designed for that, what can you tell about actual performance given the current amount of solar?**

**BH:** We are prepared to add more solar if needed; right now per the Tesla app it looks like we are getting about 75% of our energy from the solar panels right now.

**Q: What brand name or standards should a new home buyer be seeking these days when purchasing a home? Is there a "Good Housekeeping" seal of approval, a new home buyer should be looking for today?**

**JC:** Well, that's a great question. There's a number of good programs. I am, as you know, very much in favor of the National Green Building Standard, and they recently created the NGBS Green+ Wellness badge. And Wellness Within Your Walls (WWYW) supports that badge, and we are another layer above. We get into the transition between the builder to the designer and architect, to the home furnishings and interior designer folks, to the consumer. So the National Green Building Standard is really designed specifically for the builder to follow the guidelines of building a sustainable, high-performing home, there's our WWYW education, along with some others, such as LEED for Homes, who has done a great job. They led the charge 15 years ago with putting together materials sheets and figuring out what can help keep the toxins down, which we've adopted. There's also a more commercial program, which is the WELL Institute, who has done a great job. WELL is often for much larger buildings and multi-story buildings, while Wellness Within Your Walls is really focused specifically on the residential builder, the single-family builder, and we focus on the consumer. We have found that we're helping bridge between institutions and federations like NAHB and the National Association of Realtors. We're a nice add on in helping them connect with the consumer on what really is important. So as far



as a "Good Housekeeping" seal of approval, that's a household name and I'd like to believe Wellness Within Your Walls will be a household name in years to come.

**BH:** There's a lot of good standards and tools out there between the Living Building Standard and LEED. Hayward Score is a tool that can allow you to assess your own home and understand its own impact. Pick one. I think the biggest challenge is to get people from, 'I'm not sure I understand this whole discussion about health' into the discussion and then up to some of these advanced standards. So we're anxious to make the understanding of healthy home accessible to every builder in every market.

**SC:** From a touchpoint perspective, people are asking - so the state of being right now is 'help us, tell us what to do, and give us guidance'. And so the builders have the ball. It's your time. Now we simply need to deliver the message and the information that the folks on this screen are sharing with you right now. I mean, which standard it is it may even depend a little bit from market to market, but there are national standards that are totally solid. You guys have them.

**JC:** And I would say to any builder that's on this workshop seminar today, I would start with the Hayward Score. It's a survey, and it is very well-written. It's not for new homes exclusively. It's for all homes, and it might be that you live in a really old leaky house, but it might be healthier because it is leaky, and air is moving in and out versus some of these energy efficient homes that are high performing that are so tight and have not really considered the ventilation like they should.

**BH:** The interesting thing about it is a lot of people talk about the concept of healthy home, but with 85,000 homes scored and tracking 22 medical symptoms, we now have the largest study on health and housing ever created. And so we use data that informed us about what assemblies and what places in each climate actually lead to healthier outcomes to develop a lot of the work that we've done at Hayward Score, Hayward Healthy Home, and now Jillian with Wellness Within Your Walls.

**Q: To your knowledge is the medical community assisting with the idea of healthy homes and talking about this to their patients?**

**BH:** In the integrated medical community they're aware of it. In the asthma and allergy community it is recognized that the home is a trigger. At Harvard, at the T.H. Chan School of Public Health, Joe Allen's written this book called "[Healthy Buildings](#)." And this is a study with the medical community, the public health community, and the business school where they've documented the business case of healthy buildings, but the premise is your building manager has more to do with your long-term health and wellness than your doctor. And that's documented, right, the impact of buildings. It's not a debate; it's documented.

And so what I say is your home, as we now spend 90% of our time at home, and this is where we breathe most of our air, this is where we get exposed to most toxins, your home has more to do with your long-term health than your doctor. So when we think about the wellness community, they're super interested in it. One of the things I had to do, because I run a chain of lumberyards in central California, is figuring out how to convey the values of healthy home, not air tightness, to compete with granite countertops, fancy cabinets, new appliances, hardwood floors, and walk-in closets. That's what everybody wants.

But it turns out when you say, you walk somebody into a healthy home, they say, "It's peacefully quiet in here." You can't hear the neighbors. People are like, "I like that." And there's no dust. And you look around, there's literally no dust. I want that. And oh, it's pest free because the pest can't get through the gaps because



there are no gaps where the air leaks through. They like that. So it's those values that really distinguish a healthy home and drive consumers to say, "I want to be part of that." Oh, and by the way, it has almost no energy bill. That's cool too.

**Q: Round table wrap-up:**

**SC:** I think the time is here. I think that the tools that have been discussed, Hayward Healthy Home, which we use when we're going to buy something, when we're going to rehab it, when we're going to lease it, we use it, and it matters. It gives us guidance, and it gives comfort to our partners, to our tenants, to our buyers. I think the tools are out there. I think the dialogue and the opportunity is now, and I think everybody listening should really grab these tools and go because these things do absolutely impact value. When we buy and build right and sell, not only do we reduce the liability and exposure, but we reduce the insurance costs. There's a whole different conversation about how you can make your economics more efficient by listening to this discussion, which we would love to share with you at a later time.

**JC:** There's great education out there. We're just, Bill and I are just two people working hard for the same goal, but it takes a large federation like NAHB to get the messaging out to the builders. And what I'm really hoping for is that the production builder is going to see the value in this because most people in America do live in production housing, and these concepts, these strategies, they are all adaptable to any price point, as Bill had pointed out with the Habitat for Humanity strategies that are built into his beautiful luxury home. So I think we've got a long way to go, but we're on the right track, and it's wonderful to know that there's folks like Scott out there that believe in this path. And I do believe many, many more real estate folks and brokers are seeing the value, and they really are at the forefront chatting with the consumer and reporting back on the acceptability of this movement.

**BH:** The implication is that we in the building material industry are now in the healthcare business because the reality is homes do have a significant impact on the health of the occupant, which means that affordability in housing really needs to include the discussion of medical expenses. And when you add the two together, and you realize that you can have a huge impact on reducing medical expenses, people can be helped with energy efficient housing, it's a win-win across the board. And we know how to do it. The technology to do it has existed for over 10 or 15 years. Energy efficiency technology was solved years ago as well. So we have the toolbox. There are pockets around the country that are doing it. Now we need to share the knowledge and accelerate our movement towards healthy housing to create a healthier planet.



## ADDITIONAL INFORMATION

**Recommended reading:** [Healthy Buildings](#): How Indoor Spaces Drive Performance and Productivity by Joseph G. Allen and John D. Macomber. Harvard University Press.

[Hayward Score](#): Hayward Score identifies the major issues in your home that can impact your health and gives you personalized actionable recommendations to fix them. The [free score](#) is calculated based on your answers to several questions about your home and where it is located.

The Hayward Healthy Home answer to 'What makes a home healthy?' is captured in [five principles](#):

- Continuous fresh air
- Proper sealing and insulation
- Non-toxic materials and products
- Cleanable surfaces
- Healthy home habits

[Wellness Within Your Walls](#): WWYW provides a solution to healthier living environments by empowering consumers and the building and design community to sort through overwhelming information and make healthier choices for interiors. WWYW partners with builders, architects, designers, manufacturers, and the consumer, teaching how to make responsible decisions prior to, during and even after the design and execution of a building. WWYW certifies people, places, products, and programs globally through education and health and wellness protocols. WWYW utilizes a 10-step holistic approach – the [Healthy Living System™](#) and provides training and [certification](#) for professionals and a certification path for homes.