

Hannah Debelius: Hello. Welcome to 2021 Better Buildings Summer Webinar Series, where we highlight the best practices for Better Buildings Challenge and Alliance partners and other organizations working to improve energy efficiency. Next slide.

Our webinar today I'm looking forward to is called Workplace Evolution: Supporting Occupant Health While Achieving Energy Efficiency. So today, we're going to be exploring the connections between energy efficiency and occupant health and unveil strategies for maximizing impact in the evolving CRE market. We have a whole host of industry partners here today to talk about their experiences and how they've been able to make decisions and make progress in the health energy nexus, especially over the very challenging last year and half or two years. Next slide.

My name is Hannah Debelius, and I'm in the Buildings Technologies Office of the US Department of Energy. And I'm very pleased to be moderating your session today on behalf of the Better Buildings program.

However, I'd also like to start out by introducing the tool we'll be using today. We're going to be using an interactive platform that's called Slido. And we'll be doing both polls and also taking Q and A here. So right now, if you could open up either your mobile device or another browser window and go to www.slido.com, you are then going to enter the event code DOE. So again, go to slido.com and enter the event code DOE, and that's how you're going to be able to access this tool. I'll give you just a moment to do that.

All right. So at any time during this session, you can use this tool to put in a question, and you'll also be able to, once you see that list of questions, go ahead and like or give a little thumbs-up to the questions that you like. And over the session, those will rise to the top, and so we'll be able to prioritize those for our panelists. And in this session, in particular, we're going to have plenty of time for Q and A at the end. So I hope that you start inputting those now.

However, we'd like to start with a little poll that, again, also uses this tool. So on slido.com, you can enter DOE, and that's where you're going to interact with us. But we can go ahead and launch the first poll. This is just a little pulse check. We are curious how many of you are back in the office full time. And we know that the focus on health and energy efficiency has really been catalyzed by the last two years. And so this is just a little pulse check for our audiences.

So a lot of you not back yet, but planning to return. And actually a lot of you also, "No, but part time," or about a quarter, "No, with no plans to return." And I think what this really speaks to is that evolving workplace piece of our session today, where we know that commercial real estate properties and office buildings have evolved a lot, and demands for space size and space type have really changed. All right. Thanks.

Well, let us move on to our second poll here, which is going to ask you to put on your professional hat again for the things that you're thinking about. We're curious to know what are your organizations' current priorities in relationship to health, operations, and energy efficiency? And you can choose all that apply here. Yeah. There go people coming out the gate clicking them all. We know there's a lot to consider right now with the health energy nexus, and so we'll dive into a lot of these today.

So right at the top is "Communicating a safe return to work." And I think that's interesting because for some of you have probably a different hat than you're usually used to wearing about your building operations. And so I think that's something you could probably ask our panelists about. "Occupant wellness" rises to the top, and that's probably true for existing buildings and maybe considering for design and how your priorities for the design of buildings have changed. All right. And then some classics: "IAQ," "Ventilation," and "Filtration." All right. Thank you.

I wanted to launch our last poll today before we get into our panelists. And that one is, "When making building operations decisions at the nexus of health and energy efficiency, who are the stakeholders involved?" This is a short answer. So it's an open answer. And this could be stakeholders that are inside your organization, such as an HR representative or executive. Or it could also be stakeholders outside of your organization.

"Members, the local government, employees." Yeah. "Executives and C-suite," certainly. Yes, "Tenants." *[Laughs]* "Tenants and landlords." We know that particularly over the last year and a half those conversations between tenants and landlords in regards to health and that safe return to work that you also indicated on these polls is rising to the top. "Union officials." Excellent. "A health and safety officer." That's interesting. I'm curious how many people also work with health and safety officer in their building. A lot of "Facilities personnel," or "Facilities leadership and board members."

Well, it's clear that you all have your work cut out for you because there's a lot of stakeholders. And we know that it's been tough. But we're seeing overall has been a lot of our partners are considering the introspection of health and energy efficiency a priority. So we're interested to hear more about that.

So with that, I think we will close our poll. Thank you very much for all of you who participated in that. And again, you can continue to keep Slido open, because that's where you'll be submitting your Q and A for the whole portion of this.

We have a whole fleet of panelists with us today representing different industry organizations and organizations directly. So we'll spend some time hearing from each of these wonderful panelists sharing a little bit more about their stories. And then we'll still have plenty of time at the end, again, for that discussion and Q and A.

So with that, I'd like to invite Larissa Oaks to join us on video. She's the indoor environmental quality specialist at the US Green Buildings Council. She manages technical development and maintenance of the indoor environmental quality credit category and LEED. Larissa is interested in how the quality of the built environment impacts our health, effectiveness, and overall happiness. So with that, Larissa, please take it away.

Larissa Oaks:

Great. Thanks, Hannah. Hi, everyone. So, as Hannah mentioned, today I'm going to be speaking from my perspective with my work at the US Green Building Council, and really the experiences that I've had with working with buildings during the pandemic, specifically related to navigating LEED certification. Next slide.

So, to explain kind of how we in LEED balance energy and health, the LEED rating system has seven goals that outline what we're looking for a LEED project to accomplish, and these goals are the foundation for how LEED points are allocated to the green building strategies that are included in the rating system. And of these seven goals, the first two: climate change and human health; have the most weight. So 35 percent for climate change and 20 percent for human health.

And this allocation process ensures that when we're assigning points to credits in the grading system, we're rewarding projects for the actions that are taken to reduce global climate change, as well as enhancing individual human health. And this also encourages really finding solutions that contribute to more than one goal. So

for example, energy savings can contribute to reducing global climate change, as well as improving indoor air quality, or air quality; which enhances human health. Next slide. Okay.

So how have things changed for us in the past 18 months? In February of this year, we launched our annual community survey to gather feedback from the USGBC community. And this year's survey was focused on COVID-19 recovery and how the green building industry can thrive post-pandemic. One finding from this survey was that members see more demand for buildings to promote a healthy environment for occupants.

And more people understand the link between buildings and the environment and how the connection impacts individual health and wellness. In this survey our members indicated that they would like USGBC to focus on health and wellness in 2021. So that was really the top priority that they suggested we focus on. And regarding opportunities for the green building industry, due to the pandemic the top responses that we received were increasing monitoring of indoor air quality and focusing on innovative ventilation strategies. Next slide.

One of the biggest challenges that we had during the pandemic and continue to have is identifying what indoor air quality strategies are most supportive for reducing virus transmission and what we'll continue to benefit the buildings after the pandemic. Next.

And the way that we've been exploring these challenges is primarily through a pilot credit. So the pilot credit process allows us to learn more from project teams as they implement new ideas. And in this case, they're implementing improvements to their buildings for indoor air quality during the pandemic with a goal of reducing virus transmission indoors. And it's still kind of early in the learning phase with this pilot credit.

But we have implemented one revision of the requirements earlier this year to incorporate initial feedback that we've received, which was that many LEED buildings are finding it more feasible and energy efficiency to improve their filtration or add air cleaners, rather than increasing the amount of outdoor air that they're bringing in. And of LEED, we've historically focused a lot on filtration of outdoor air pollutants, not as much on filtration of the indoor air, recirculated air.

And so during the pandemic and through this pilot process, we recognized that more emphasis was needed on filtration of

recirculated air in the LEED rating system. And we did actually add this strategy to our enhanced indoor air quality strategies credit for the design and construction projects.

During this pilot process, we're also interested in understanding the best way to evaluate and score energy performance. So prior to the pandemic, LEED buildings had much more stable occupancy. Whereas now the occupancy is more variable, and in many cases it's been significantly reduced. And generally, for buildings that have significantly reduced their occupancy, we're seeing that they've not been able to reduce their energy use by as much. And so these projects are then receiving lower energy, LEED energy, performance scores than they were previously.

And so for this next phase of the pilot credit, we hope to get more feedback from projects that are fully improving their energy efficiency while adjusting their air quality strategies to be more responsive to the occupancy changes that are happening, will continue to happen, and to the health needs in the building.

I'm going to stop there and pass it back to you, Hannah. Thank you.

Hannah Debelius: Awesome. Thanks, so much, Larissa. We really appreciate that perspective. It's a little bit unique from our other panelists. Thanks so much. I will also say that you've got a couple of questions that came in for Q and A there on Slido that we'll address at the end, but if people are interested, they can go ahead and click the "Like" Or the thumbs-up button on that. It will move it to the top.

With that, we'd now like to welcome Jim Landau, who is the director of environmental social and government from MetLife Investment Management; Real Estate, Equity, Debt, and Agriculture Finance division. He oversees initiatives that include on-sight renewable installations, energy and water efficiency in existing buildings, and new developments and assessing impact of climate change and resiliency for new equity and debt investment. Excellent. Jim, thanks so much, and please take it away.

Jim Landau: Do you want to go to the next slide?

Yeah. Just really briefly. So, I'm with MetLife Investment Management, and we manage MetLife's investment real estate portfolio. That's the equity end of that. We also, of course, have a corporate sustainability team that oversees our corporate offices around the world. Just wanted to show really quickly these are the

goals, the new 2030 goals, that we published about 6 months ago. They're available publicly. And they include both on the investment side and the corporate side.

And just a few of them that I wanted to point out. One, reducing GHG emissions by 30 percent between 2019 and 2030. And that's not the focus of this webinar, but I'm happy to answer any questions about that. Achieving green or healthy building certifications in 40 percent of our global office portfolio. And that includes both on the corporate side and the investment side. We're pursuing both well, where feasible, and fit well programs.

Twenty billion dollars of new managed green investments. That's both new equity investments and new commercial mortgage originations. We've got about a \$25 billion equity portfolio, and about a \$75 billion commercial mortgage loan portfolio. I mean, in a given year, we originate \$12 to \$14 billion of new commercial mortgage loans. And we're not going to really talk about the debt side right now, because there's very little we can do there.

But it is interesting to know that we're talking more and doing more in terms of working with our borrowers and sponsors, both in terms of understanding not only where they stand at origination, but each year during the loan term, and trying to track what they're doing in terms of certifications. And while we don't have a lot of impact to tell them what to do, we think just by engaging in conversation and getting annual updates it's going to help spur change, both in terms of energy and greenhouse gas emissions, and health and wellness.

And the last goal, power all of our MIM managed and controlled real estate investments with 100 percent renewable energy. I'm actually happy to report that we're 25 percent of the way there as of 2020. And just with programs that are in place already, solar installations, green power purchases, that sort of thing. We'll be above 30 percent next year, and we think that's a good platform to start with. Next slide, please.

So in terms of COVID, one of the first things we did, and I know we're not really here but we put together a task force. I ran it back last April, when we all thought that this would be over and done come last summer, right? And it's important to note that we're not like a – we don't manage our own property. We have third-party managers for all of our assets. And that includes office, multi, high-rise, low-rise, mid-rise, suburban, urban office. Same thing with multi-family, retail, hotels, large industrial warehouses, data

centers; that sort of thing. So it's a pretty diverse portfolio around the US.

So we put together essentially two sets of guidelines, or considerations. We debated. Legal told us we couldn't use the word "guidelines." Considerations. That we distributed to all of our third-party managers. And we build this. We wrote this with the help of our third-party managers. So we had an internal task force. We had consultants that we use already, consultants. And for the office document, we brought in some of the chief national engineers with CRE, and Krishman, and JLL. They all produce their own documents as to Western, and Lincoln, and other firms. But we read all of that. And we had a lot of discussion with the evidence document. We did the same thing on the multi-family side, working with partners like Zudo and Gray Star for their help and assistance.

And at the end of the day, the goal was to really just put all of the best information and best practices that we could assemble in a fairly concise form in front of our teams, and then encourage them to think about what works for their tenant base, their geographic location. Are their tenants coming to work? Are they not there at all? Is it a retail property that's essentially not getting a lot of action? Our hotels, many of them were closed in entirety for several months or had average occupancies ranging from three to ten percent in very limited services. So really varied by property type and by geography. But essentially, just really a lot of conversation and a lot of feedback going both ways. And the last slide.

This is just an example of one of our office buildings in Seattle. And again, working with our team – by the way, I should add that we have an internal architecture and engineering team. So we have a dedicated architect in each of our seven regions around the US. And they're working closely with our asset management team, the SG team, and all of our third-party managers. And, in many cases, directly with tenants, particularly where tenants occupy the majority or, in many cases, the entirety of a building, to figure out what works for them, how many of their people are coming in.

And again, we're not experts on UV lights, or bipolar ionization, or other technologies. But we assemble talking to all of the experts that we work with internally and externally, the best information, best practices, we work with the EPA and DOE teams, and we just put this information out there. In some cases, they're tested. In

other cases, they weren't. But again, the goal was get good information out there.

We sent surveys to many of our tenants at the end of 2020, asking simple questions. Are you happy with the building? Are you happy with owners' efforts to manage the building during this stressful period? And we get great, great feedback. At the end of the day, feedback almost, in almost no instance came back with, "We're thrilled that you used number 15 filters." Or, "We're thrilled that you used bipolar ionization, or a portable filters in the lobbies." The feedback was generally, "Thank you for engaging with us. Thank you for asking us what we were doing within our premises, how building ownership can help." And again, it was really communication, putting best practices out there, and then just communicating and sharing that across the platform.

And that's it for me, Hannah.

Hannah Debelius: Excellent. Thanks so much, Jim. Next up we have Dana, Dana Robbins Schneider is the senior vice president director of energy sustainability and ESG for Empire State Realty Trust. Dana's responsible to define, lead, and execute a comprehensive program for all company- and property-level energy and sustainability initiatives and to coordinate and develop the company's ESG and wellness program and reporting. So thanks so much for joining us, Dana. And go ahead and take it away.

Dana Schneider: Great. Thanks, Hannah. So, thanks, everybody for joining today. My work at Empire State Realty Trust and our focus here is literally to balance health, healthy buildings with energy efficiency. So I was excited when Hannah asked if I would talk on this panel. I think a lot of the speakers today were in the same position as we were; which is we were faced with a completely unpredictable situation starting in March of 2020, and we had to stand on our feet and figure out a way to ensure that our own employees, as well as our tenants as they began to come back to the office, would be healthy, would be safe; that we were doing all we could to do that for them. And to balance that with our very aggressive commitment to energy efficiency in our spaces.

And so as Empire State Realty Trust, we've been leaders in energy efficiency and in better environmental quality for well over a decade and really started these initiatives in 2007 portfolio-wide. So we have in our environmental quality measures, which we actually had in place for quite some time here, we have bipolar ionization, which we began rolling out in 2012 in our portfolio.

And then we also have MERV 13 filters in 100 percent of our air units. That was a big, it's been our standard for a long time, but we actually verified every single unit that we controlled across every single building. We have had a longstanding standard where no and low vol organic compounds in cleaning materials, in the construction materials, adhesives, paints, sealants, carpets – you name it – no and low VOCs. And we also actually don't allow materials on the red list.

And then we also have aggressive water quality testing, temperature testing; which I don't think is covered as much during the pandemic, but which I wanted here because healthy spaces are not just about air quality, daylight, use, things like that. They're also all about, water plays a big role here. We do quite a bit of research and roll outs there, as well.

And so things like the filtration, the low and no VOCs, the red list, even the bipolar ionization, the active air purification are things that we've had as standards for a long time. And those things were part of what we call our high-performance healthy sustainable guidelines. We apply these to every single lease, for design, for construction. And then we go back and do audits and let our tenants know what opportunities we see for them to continually improve not only their energy efficiency, but their indoor environmental quality.

So at the same time, we look for things like equipment that's left on when no one's there, or lights that are left on, that controls aren't working correctly, for advanced BMS capabilities and algorithmic software programs for optimization. We're also looking at the indoor environmental quality holistically.

We have goals for carbon neutrality for the Empire State Building by 2030 for the whole portfolio by 2035. And we never compromise health for efficiency. We can do both. In fact, we're committed to doing both. And just going back to some of the questions that you guys saw in the very beginning, we were actually the first portfolio, the first building, Empire State Building, in the Americas to achieve the Well Health Safety Rating. We were awarded the Well Health Safety Rating for our entire portfolio, including the Empire State Building's Observatory in September, 2020. And that I think is extremely important.

And if there are questions about that, I think it would be great to have a discussion around why we chose to pursue a Well Health

Safety Rating. It was extremely important for us not only to say that we had done all these things, but to use one of the leading international standards and very rigorous standard that's science-based and medically-based to demonstrate from a third party who verified what we had implemented; not just that we had these policies in place. So I think that things like that are really important. Next.

So, we've learned a lot of lessons. We think everybody has during the pandemic. And obviously, it's been a horrible tragedy globally. But hopefully we can also use this to learn lessons that help us moving forward. There has to be some silver lining of what we've all gone through together. So some of the lessons that we've learned is that indoor environmental quality is a top priority for tenants and for prospective tenants for our employees for all of the building depends. We prioritize clean air, healthy buildings, increased ventilation. Like I said, the filtration, the increased testing of our water we're piloting real-time IEQ sensors. Really trying to stay ahead of this.

And I think that based on surveys that we've seen not only of our own occupants, our own tenants, but also from professional real estate service firms like JLL, Sedentary, Cushman. They're all planning that indoor environmental quality is a huge priority question, not only for tenants, prospects, occupants; but especially with younger people. And we actually just had a presentation right before this from our summer interns, and this is one of the biggest things that they kept talking about was indoor environmental quality sustainability, healthy buildings. So I thought that was interesting firsthand insight from the interns, the younger professionals.

We also observed that tenant energy usage often did not increase in line with occupancy levels. And I think that Larissa mentioned this. This has been, this was not entirely unexpected, as someone like me who's focused on energy efficiency and sustainability for over 20 years, I knew that it wouldn't be one-to-one ratio.

But I was actually surprised in a portfolio where you focused so intensely on efficiency that it wasn't more of a pronounced reduction in energy usage given all the measures that we do have in place, because these buildings were still occupied. Even during lock-down when they were five people in a building that normally has 10,000, we still have to meet these obligations. Right? Even if one person came to one floor, it couldn't be 85 degrees in their

space in the summer, or 50 degrees in their space in the winter, right? We'd be in default.

So, it's interesting to see the impact of HVAC set points, but even more interesting for us was what we saw on plug loads. And so we really have been working on plug load control technology as affordable. Plug load technology is one of the requirements of our guidelines for our tenants to use plug load controls. But it's not code in most places. And what we see is through some of the tests and pilots that we've done opportunities for 67 percent plus reduction in the plug loads that are just left on when no one's there. We actually walked through our tenant spaces and tried to address some of these issues where no one was in the space for an extended period.

But we saw the lighting controls might not be working right, that monitors and all kinds of equipment was left on with nobody there. And the pandemic is basically a case of like what your overnights and weekends look like all the time, when people are not supposed to be there. All of this equipment stays on. It's a huge energy waste. And there's lots of ways, strategies, technologies, approaches, behaviors that can improve that.

And another thing that we, lesson that we learned is that there's a huge impact of legislation. We talk a lot about the carrot and the stick. I think that I'm based in New York City. I'm in New York City now in our office. And in New York City, we have Local Law 97, which is the most stringent climate legislation in the world for buildings. I think a lot of you on the call are probably aware of this.

And Local Law 97 commits New York City to the Paris Accord, to an 80 by 50 reduction with stringent caps on carbon emissions for buildings which begin January 1, 2024, and become more and more stringent for significant reductions by 2035 in alignment with the state CLCPA goals for a more renewable grid. And so I think that you'll see. We obviously, as an owner, have begun to work towards the energy efficiency requirements for the legislation. But I think that these requirements and code requirements will be a huge driver and will actually help drive consistent results. Next.

And so another thing that we wanted to talk about is a success story. We can go through this, and we can demonstrate the balance of sustainability, energy efficiency, and a healthy building. The Empire State Building's Observatory experience was the first New York City observatory, one of the first cultural institutions allowed

to reopen. We were given permission to reopen in July of 2020, so a year ago. I can't believe that was a year ago. But we had to demonstrate to the governor and his team our industry-leading safety protocols, what we had in place, our indoor environmental quality, the department of health guidelines, everything that we had done with our ventilation, which in the top of the Empire State Building Observatory on the 102nd floor, where our air changes are over 26 times an hour, we have MERV 13 filters. We have bipolar ionization.

And in addition to that, you don't introduce the POCs we had a rigorous cleaning protocol that was green cleaning that also met the CDC guidelines for proven effectiveness against COVID, and mask wearing, and distancing. We operated with timed tickets, which we still have; although we're upping our occupancy, which is amazing. But we still do the timed tickets. It reduces the wait time and it also keeps people spaced out. We were doing temperature checks, facial coverings, social distancing. We no longer have to do those things, but we did that for a year.

And so I'm going to say in closing we were able to balance this super efficient building and also make sure that it was safe as possible, especially for the reopening of the Observatory, which we see as the reopening of New York. And so success story for the balance. I think that's the last slide, Hannah.

Hannah Debelius: Yep. Excellent. Thanks so much, Dana. And I always love hearing about the Empire State Building, in particular. But I know your portfolio is much larger than that.

The last of our panelists before we go to Q and A, we have Kim Pexton, who joined JBG Smith as vice president sustainability. She is leading the strategies development coordination and execution of JBG Smith sustainability initiatives across all business units. Throughout her career, Ms. Pexton has been responsible for the development of operational programs that demonstrated sustainability results. So thanks so much. And Kim, go for it.

Kim Pexton: Thanks. Thanks for having me here. Just to calibrate folks as to who JBG Smith is, we are an owner and operator and developer of commercial and multi-family office space. They're office space and multi-family in the DC metro area, specifically. We manage, we have existing assets of about 20 million square feet, and we have about equally as much in our development, future development pipeline. So, over the next 10 to 20 years as we work

to operationalize and develop those properties, we're going to double our portfolio.

So, when we start to think about informing and impacting the built environment, we do focus on our operational assets. And a lot of folks here today have shared their experiences, et cetera. So I'll try not to go through those same things, just sharing with you that JBG Smith really, our philosophy has always been that green building are healthy buildings, and they have been for a really long time. As Larissa had mentioned at the top of these discussions, human health has been a focus in green building rating systems. And really over the last handful of years, and certainly with the onset of the pandemic, that really has boiled that human health component up for all of us.

I think that something important – and everyone here has touched on it today – but I think that when you're looking at the various things and various suggestions at the forefront of the pandemic, there were a lot of experts, a lot of health professionals coming out and providing very useful and helpful strategies, et cetera. When it comes to the built environment, those things really kind of boil down to a handful of things.

It's cleaning and disinfecting protocols. It's indoor air quality management. It's ventilation. It's filtration, touchless tech in buildings, and also the attention to detail of the types of materials and things like that, and cleaning products that you might be using within the built environment. And that's really, as you've heard here today, that's really where all of us sort of landed on focusing our attention.

Our approach at JBG Smith is looking very specifically at balancing the green building, energy efficiency, health and wellness, and smart technologies across not just our existing and operational assets, but as I mentioned, new development.

So as we move onto the next slide, please, I thought it would be really interesting for this – not just to share some of the lessons learned over the past 18 months, because they are very similar to the experiences that have been shared with you by others today. But some of you in the audience might be wondering exactly what that, what those impacts look like from a really upper perspective. So what I did here was I just took some quick little snapshots from our ESG annual report from reporting on 2019 data, and then our 2020 data, which specifically is in that, we'll call it pandemic year, for lack of a better term.

But just looking at these quick squint testing, that lower tier, those are the numbers that we're used to experience, we'll call it, in a normalized year. We're used to experiencing almost a four percent reduction in energy consumption. That's via capital expenditure projects that had been deployed. That's also via our controls-based related programming, done through our central clearing house and the energy management, where we're running demand response related programming with utility companies. We're implementing chiller coasting programs, et cetera, and so forth. So that bottom tier is what we're used to seeing.

That upper tier is what we experienced in 2020 with COVID-related operations, so increased ventilation across our office portfolio. Interestingly, as I mentioned earlier, we do have this. It's not a one-to-one split. It's not a 50/50 split between office and multi-family. But some of the things that we actually learned from a multi-family perspective is that reductions in energy efficiency were actually realized, even though people were working from home, et cetera, and so forth. But we had amenity spaces that were closed. Certain common areas that were closed. And really reducing the energy that is associated with running those particular specialty operations within the building realized some significant energy reduction.

As we work in the coming months as CDC is changing protocols and as we're all returning to the office place and we're opening in our multi-family spaces more of our amenity spaces, we actually are going to take a lot of these lessons learned and we're already incorporating that into our plans for operations for those buildings. Multi-family, we're looking at those fitness centers. Do they need to be lit and cooled all day long, 24 hours a day? No. They don't. So, we'll be, again, working to incorporate those elements into our operational work flow. Next slide.

Also, too, there was a point in time during the pandemic – and certainly speaking with a lot of our commercial real estate peers, they were experiencing the same – where our investment committees and our executives had put maybe a temporary pause on capital expenditure spending. We went through maybe a three- or four-month period of doing that.

But then actually with sustainability team went back to our investment committee and said, "Hey, we think that this is really a great opportunity to deploy various energy efficiency projects while some tenants may not necessarily be in their spaces in the

office environment." So, we really worked to leverage that time. We got that capital expenditure dollar pause actually lifted specifically for energy efficiency related projects, and worked to push those forward. So that was a kind of a great success and great use of time.

We retrofitted lighting in our garage. In probably six or seven of our different operational office assets we were able to go in and replace the lighting, et cetera. We also have taken the opportunity to hone in and focus on establishing performance targets. In 2020, we did an analysis of our entire portfolio, and we were able to come out with a really clear understanding at the asset level of specific plans to achieve specific performance targets, reduction of energy consumption by 25 percent. Reduction of carbon emissions by 25 percent, et cetera, and so forth. So we took advantage of some of that unintended down time, if you will, to do some more of these in-depth studies and come up with very specific asset plans.

We also, in the spirit of health and wellness, we did take the opportunity to leverage our really robust indoor air quality testing and water testing protocols, and what we had already traditionally been doing by way of policy across our operational assets. And we did certify all our entire, at the entity level, our entire office portfolio via the Fitwel Viral response.

And then we also, we did that in October. And then as of July 5th this year, each of our individual assets have been certified under the Fitwel Viral Response. So, just a kind of a hodge podge of taking what we're doing from a health and wellness perspective, and just ways that we were able to continue to put people first, and that environment also balance those objectives. So with that, I will go ahead and kick it back to Hannah.

Hannah Debelius: Great. Thanks, Kim. And Kim, you can keep your video on, and I'd like to invite the other panelists back to join us on video. Thank you all so much. We have a lot of questions, so I hope to get to as many as we can. And it's not too late to either add a question or also, again you can hit that thumbs up and it will help to move a question up to a higher priority list.

And I want to, for our panelists, you all are welcome to answer any of these questions. But also, in order to get through more of them, don't feel like you have to jump in on all of them. Our first question here had ten votes. So it was actually incredibly popular. *[Laughs]* So we'll start with that one. Which is, "When it comes to

decision making to balance energy efficiency and wellness priorities, what do you see as a permanent trend that will last through the return to work phase?" For this, I think I'm going to ask Dana to kick it off, if you're ready, only because Dana, I remember you mentioning that a lot of your initiatives started in 2012, or 2013. So, I'm curious your perspective on this, and then I'll open it up to any of the other panelists.

Dana Schneider: So, this is a great question. I kind of wish I had my glasses on, because *[Laughs]* I can't read it from here. So, we, the balance of energy efficiency and wellness, I think that is the trend. I hope that. And I also think that it's really important, and to gather data to support that you can do both. So, I think that a lot of people spend too much time – personal opinion – either talking about why they can't do these things because they cost too much money, or talking about why we – and by that, I mean energy efficiency, optimization, sustainability measures in general.

You know, I spent way too long listening to people run at the mouth saying they cost a lot of money, but they actually don't know how much these things cost at all, or how much they save, or all the other benefits that come with it, and a strong business case comes with a lot of this work. I think that if anything the pandemic taught us that there's a qualitative aspect to this that's difficult to quantify.

And I hope that the research will be found in an effort to quantify the benefits that are currently seen as qualitative; things like risk, human health, wellness, productivity, death; which sounds silly, but these things are not well quantified. And in an industry where all of us except for maybe Larissa, we're publicly-traded companies, there are shareholders that we're responsible to. And there's nothing wrong with that.

I think that the trend will be the continued balance of energy efficiency, health and wellness, and then the demonstration that there's a business case – both a quantitative one and a qualitative one. We want people in our buildings, and we want them to be happy, productive, healthy, and safe. And there's no reason we can't do all of those things.

Hannah Debelius: Great. Thanks so much, Dana. I appreciate you kicking off our Q and A. Jim, Larissa, or Kim, would you like to weigh in on this question?

Jim Landau: I'll just add really quickly that, two things: one, I think Dr. Joe Allen at Harvard has told us all either one or about a few hundred times over the past year that the amount of energy that it takes to increase ventilation rates in a building is *de minimus*. So, if health is paramount, which it is, then don't worry about the energy. It's really immaterial.

The only other thing I would add is – and Hannah, you and I were on an earlier call today talking about our performance overall in the Better Buildings Challenge over the last year. And whereas we were averaging maybe two percent reduction in energy use a year previously, last year we saw about a six percent reduction. And that's all over the board, from hotels, which were north of 50 percent in some cases; to multi-family buildings that were higher in some cases; and office buildings that were all over the board based on COVID occupancy.

My point is I don't really think we know. The past year has not told us a lot about how buildings work in terms of energy performance during the pandemic. We've got, they're all over the board. So I think time will tell, and particularly as folks start coming back to the office and some of these new technologies and protocols are in place, I think a year from now, two years from now, we'll have a much better sense of what the energy impact is.

Hannah Debelius: Yeah.

Kim Pexton: Yep. If you don't mind. I would just finish up by saying, you know.

Hannah Debelius: Go for it, Kim.

Kim Pexton: I think to Larissa and others, wellness has been part of the green building movement, and I would say that it really unfortunately took a situation such as this to really elevate it in importance. So with that, I would say that those things that have always been part and parcel of the green building program: ventilation, filtration, focusing on low VOC materials, cleaning, touch-free; those are things that are built in, and they are built into green building, and they're also built into Fitwel and WELL. So I do think that those things will continue on.

Hannah Debelius: Great. Thanks, Kim, and Jim, and Dana. The next question have on our list here is, "What resources or tools help you navigate the health energy intersection?" And actually, Larissa, since you are representing one of our industry partners on this, I might kick this off with you, if you have any suggestions. But actually this one I

think would be great for just a rapid fire if you have, you know, top-of-mind resources that have helped you out on this.

Larissa Oaks: Yeah. And I think this might relate to some of the other questions that we have further down for just balancing or for better understanding filtration impacts, versus increasing outdoor air. So I just want to mention I think a lot of if you're earlier in the design process, the energy modeling process can be used to kind of balance or understand different trade-offs.

But there are some great tools that have been developed, a lot of them during the pandemic. And Varid has an energy estimator kind of tool that they have put together. And then we've also found through our pilot credit work there's a lot of inspection risk tools that have been developed. And so I can maybe add that to the chat, the links to those tools. But there's a lot of them that are really rooted in understanding transmission indoors and the different strategies that we can use, and which ones might have better mitigation of the risk.

And then we've also published recently a research anthology, which is really looking at green building strategies and health, and looking at research that kind of backs up why you should pursue some of those strategies. So I'll put links to all of those in the – is it better to do the chat or the Slido for that, Hannah?

Hannah Debelius: You can reply to someone's question directly on Slido, and I'll also say, Larissa, that we send out an e-mail with this recording to everybody after the fact. We can also include it like inside the resource links, at that point.

Larissa Oaks: Okay. Great.

Hannah Debelius: Would anyone else like the weigh in to share some resources or tools that have been helpful here?

Kim Pexton: Sure. I could say of course, I'm sure, everyone's following CDC. *[Laughs]* That's probably number one. A little bit on who, but then also specifically, too, there actually was some great guidance and task force on the ASHRAE side that were put together with specifically speaking to ventilation and filtration and sort of the myths demystifying all of those pieces. So, also happy to send those to you, Hannah, if we can distribute to folks afterwards.

Hannah Debelius: Okay. Great. Thanks so much, Kim.

Larissa Oaks: I just want to add to that that yes, the ASHRAE core recommendations, I think we've all found, were very beneficial during this whole process.

Hannah Debelius: I would be remiss if I didn't note that Better Buildings Solution Center does have a COVID-specific page that has some high-level information. And actually, Jim, because you mentioned Bill Allen, he was one of the plenary speakers in the Better Buildings Summit in 2020, so you can also catch some of what he had to say in the Solution Center.

In the interest of time, I want to move forward so we can fit in a couple more questions here. Larissa, I know that you touched on this already with your last response, but the next question is directed towards you, which is, "You mentioned building owners were finding it more energy efficiency to increase filtration as opposed to ventilation. Do you know how this could be evaluated?"

Larissa Oaks: Yes. So I think kind of same answer. Definitely could look at this during the energy modeling process. But for an existing building, I would point you to one of those resources that I'm adding to the previous question. So really, there's a few kind of broader energy estimating tools that could be used. We have not developed any specifically for LEED, but there are some industry tools that are available for that process.

Hannah Debelius: And, I think we actually already the, "What resources/tools," we just addressed that one. So we can take those two off. And Jim, that bumps it down to a question that's directed to you, which is, "Jim, seeing that you are also touch equity goals, how does that factor into the health and energy efficiency conversations?"

Jim Landau: You know, this is really part and parcel with the next, the following question, as well. Our buildings are all multi-tenant buildings. They're not owner-occupied. They're occupied by office tenants, multi-family residents, hotel guests, et cetera. It's been a difficult year for everybody. And really, our goal is to keep existing tenants and residents comfortable with our efforts, and work in partner with them in terms of what they're doing within their premises to the extent that we can, as well as thinking about new and prospective tenants and residents.

So it's really, at the end of the day, we want to keep our buildings occupied. We want to expand and renew and attract new tenants. And it's a tough environment out there, obviously, for everybody.

So it's really just a matter of partnership. At the end of the day, that's how we create value; not by starting top-down, but really bottom-up.

Hannah Debelius: Jim, that makes a lot of sense. And I'm going to go off script a little bit here, because I'm also curious. This question asks, of course, about equity and its relationship to health. And I don't think it's on the top screen here, but there's another question that was about how does water relate to the energy and health question? And Dana, that was something that I think was directed to you. So AI, you don't highlight a question, but Dana, if you could just quickly talk about how water connects to the energy efficiency and health aspect.

Dana Schneider: Sure. So, I don't see that question up here.

Hannah Debelius: The question is not – I know. It was further down, so it took a second to highlight it.

Dana Schneider: Just "energy and water when it comes to health?" So those are, that's a great question. And there's two pieces. So I think this question is mostly focused on why do you care about water for the health of the occupants, which is a fair question. And I don't think people thought about it much, unless they're people like Larissa, Kim, Jim, and me; who have to think about that already. What we learned during the pandemic shut downs, specifically, is something that we did not ever have to deal with before, which is the risk of stagnant water in buildings and in systems.

And people did not think about that. We started thinking about it right away, and Jim, Larissa, and Kim might have thought about it also. It's something we didn't speak about much as an industry. We started acting on it right away, because in New York City, we have really aggressive Legionella laws and legislation. There have been very, very few; but there have been terrible tragedies of people in residential buildings.

And so we wanted to get right on that, because my engineers and I started talking once we were at the end of March and realized this would be more than a week or two. Because really, it's hard to imagine now, but when this first started as a shutdown, we thought it might not be long. And so we started talking at the end of March around what to do about water if no one's running water. If no one's flushing toilets and no one's running sinks, you have a problem with stagnant water.

And even though we are very rigorous in how hot we keep hot water tanks, and things like that, to prevent the growth of harmful pathogens, bacteria, et cetera; not all the water in the pipes is kept that way, right?

Hannah Debelius: Mm-hmm.

Dana Schneider: And so we started making sure that on their rounds, because building engineers and staff are considered essential workers throughout, we had them do rounds every single day of running the last sink in the bathroom. We had them flush the last toilet in the line to make sure the water kept moving, so that we didn't have issues with stagnant water. And then before in New York the lockdowns were different everywhere in New York City. We had a mandated lockdown except for essential workers from about mid-March until about mid-June.

So throughout that time, we did these rounds. And then we also did fully drained, cleaned, disinfected all the systems, and retested all the water before reoccupancy. And so those are things I don't think people typically did. We didn't usually have to keep the water flowing, because our occupants have done that for us. We have done regular water testing twice a year as a standard.

And one more thing, I think people don't think about is that water use is highly tied to energy use in commercial buildings. So, a smaller portion than you think is due to people flushing toilets and drinking water. The majority of the water use in commercial buildings is actually for HVAC. So, also an opportunity for savings.

Hannah Debelius: A great point. Thanks so much, Dana. And with that, we are exactly at the top of the hour here. So I want to just highlight a couple of Better Buildings things. We are in the middle of our webinar series for Better Buildings. So I hope that you will join us for more of those sessions. In fact, the next one coming up is Energy Savings Success Stories, which is all from our Building Envelope campaign. So you can join us for that on July 27th. We also have on-demand webinars available, including all of our recordings from the Better Buildings Summit last May. Again, on the Solution Center.

And with that, you can bring our panelists. I want to thank you all so much. I know this has been a really trying topic over the last two years. We really appreciate you coming to the table and sharing tools and resources and some of the stories from your

portfolio or your work. So thank you so much. It was wonderful. And for attendees, you'll be receiving an e-mail when this is available online. You can go through and get contact information, or click links and watch the recording. So, thank you all so much, and have a wonderful rest of your day.

Kim Pexton: Thanks, everyone.

Larissa Oaks: Thank you.

[End of Audio]

Resources:

1. Tool to estimate the cost and carbon impacts of HVAC COVID-19 mitigation strategies : <https://enverid.com/awards/open-source-enverid-covid-19-energy-estimator-available-for-building-engineers/>
2. List of Infection risk tools to understand risk mitigation of various mitigation strategies <https://www.usgbc.org/credits/safety-first-155-v4.1?view=resources>
 - a. COVID-19 Airborne Transmission Tool by Professor Jose L. Jimenez
 - b. Portable air cleaner calculator for schools by Harvard-CU Boulder
 - c. happē Facility Infection Risk Estimator v2 by Branch Patterns
 - d. COVID-19 Energy Estimator by Enverid
 - e. Safe Air Spaces COVID-19 Aerosol Relative Risk Estimator by Dr. Richard Corsi and Dr. Kevin Van Den Wymelenberg
3. Research anthology of Health promoting building strategies: <https://www.usgbc.org/resources/research-anthology-health-promoting-building-strategies>