

*Maria Vargas:*

Welcome everyone. We're going to get started in just a minute. You are at the right place. We're just going to get started in a minute. We're going to allow one or two minutes for everyone to join. We're glad you're here. We'll be with you shortly. Welcome everyone. We are thrilled that you're here with us today. We are excited to be doing this special webinar as part of the Better Buildings webinar series. My name is Maria Vargas. I'm the director of the Better Buildings Initiative at the US Department of Energy. And this is always one of my favorite webinars to do so I'm glad that you joined us today. As many of you know we host webinars at DOE to bring you the latest actionable insights from leading industry experts and webinars like this are a great chance to explore topics, technologies and to give you the opportunity to ask questions and engage with the speakers.

So before we dive in real quickly just a couple housekeeping points that I have to cover. Please know that today's webinar is being recorded and it will be archived on the Better Buildings solution center and we will follow up with today's recording and the slides to let you know that those are available. Attendees you are in listen only mode meaning that your microphones are muted. If you do have any audio or visual issues during the webinar just send a message in the Q&A box in the chat on the bottom of your Zoom panel. So ok. Let's get going with today's webinar.

So today's webinar again is one of my favorites because we have asked four speakers from this year's Better Buildings Summit that we did in May of this year, the Better Buildings and Better Plants Summit to come back and give presentations from the following four sessions that you see, items two, three, four and five, four speakers from those sessions to go over their presentations albeit an abbreviated one. We've asked each of the speakers to speak for about six or eight minutes and then we're going to come together at the end with any questions that you may have. So that's the plan for today. One other thing that we work really hard at at Better Buildings and at DOE is to make these are interactive as we can. So we're going to be using a platform.

If any of you have been to our webinars before you will know that we use Slido.com to engage with you as attendees in the webinar. So if you will go to Slido.com on your mobile device or you can open a new window on your computer. The event code is pound sign or hashtag DOE and if you'd like to ask our panelists questions submit them any time throughout the presentation. You can also upvote questions that you think are interesting and then I will try my darndest to moderate the session. At the end after the

speakers have given their presentations and get to the questions that folks are most interested in having the panelists address.

So let's go ahead and just make sure everybody is familiar with Slido and we're going to start off with a poll. It's a really easy question. Did you attend the 2022 Better Buildings Better Plants Summit? Would you just tell us over Slido? That would be terrific. And again if you're having any issues please message our tech support team. So ok. I see the results coming in. Oh my goodness. Ok. We need to change this. This is why we ask these questions. We would welcome all of you to attend an in person summit. We're working hard to figure out when our 2023 summit is. Please stay posted on the Better Buildings channels for that. But it's helpful. Ok.

Well, this is great. So I would say about maybe 60/40, half and half. Maybe half and half. Ok. Terrific. Ok. Well that's very helpful and I think that's helpful for our panelists to know that folks may not have been at an in person summit so going to get to take advantage of the presentations today. Ok. Well, great. Well let's – thank you everybody for using Slido. We appreciate it. We're going to again continue to do that. So just as a reminder the Better Buildings Better Plants Summit is something we do every year. We were so excited to be back in person in 2022.

It is our annual event where partners come and really hear from other partners and other organizations that are working on many of the same issues that you probably are working on and it really is an opportunity to talk, to explore new and emerging technologies, share innovative strategies on energy efficiency and increasingly on decarbonization including the use of renewables and other technologies that are going to help minimize your carbon footprint. And again our goal at the summit if you haven't been – for the half of you on the call who haven't been to the summit we work very hard to make those all the sessions at the summit interactive and we do the same here on this webinar. So ok.

With that let's go ahead and get started. I want to introduce, I'll introduce them each with a little bit more as they speak. But today's presenters you can see on the screen we're very excited. Just as the Better Buildings Initiative works broadly across the US economy to drive and accelerate both energy efficiency and decarbonization you'll see that the speakers we've got today asked to speak today really represent very different kinds of organizations and different parts of the country that are working and leading the way on these efforts. So we are thrilled to have

Marco, Joe, Tim and Ana today. So we appreciate your being here. So without further ado let me go ahead and kick it off.

We've asked Marco Gonzalez from Waupaca, Waupaca to speak. And he's going to start off by recapping his presentation from the Best of the Betters. This is an opportunity within our industrial partners to really highlight some of the work they're doing at their industrial facilities. Just quickly about Marco. Marco is a corporate energy manager at Waupaca Foundry and he's responsible for leading the energy management and decarbonization efforts to achieve their corporate sustainability goals. He has about 20 plus years of energy management experience and utilities and with manufacturing companies and with more than 100 energy assessments completed in industrial sectors. Marco take it away. We're glad you're here with us and we appreciate your double dipping, doing your presentation at the summit and today. Thanks Marco.

*Marco Gonzalez:*

Good morning Maria and good morning to you team and everybody. Thank you for having us. It's a real honor for us to be here and share our successful stories with everybody and hopefully we can inspire others to improve their compressor systems. So please go to the next slide. Ok. So we are Waupaca Foundry. For those who doesn't know us yet Waupaca is the largest foundry in United States and pretty close to being the largest in the world. Just to give you a quick reference we made over 10,000 pounds in one day at six locations and that's pretty much the same size of the Eifel Tower just to give you a good idea. We do best in class gray iron, ductile iron and different types of iron for customers. We employ 4,500 employees across our plant.

And since the early 2000s we're committed to building a green foundry business and we're proud to say that that is back supported for sustainability goals that were established in the early 2010 and we will continue towards 2030 and 2050. And two of those goals which is our energy reduction effort and our CO<sub>2</sub> decarbonizations are backed through the Better Plants and the Better Climate Challenge programs where we feel proud to say that we were one of the founder companies in both programs. So we serve different sectors and I'm pretty sure you would have at least one product in your car or in your house that were cast in our foundries. Please go to the next slide. Ok.

This is our plant one where our story begun in 1955 and this is, it also became the first foundry to be ISO50001 certified in the United States. And for those who are not familiar the ISO50001

standard is the energy management standard. And this facility over the last ten years has achieved over a 30 percent reduction versus the energy intensity baseline back in 2009. Today we are 30 percent less energy intensive producing the same amount of casting so we're very proud of this one. I'm very proud to say that this one, this was the plan awarded for this project. Let's go to the next slide.

So to give you a little bit of background this project is, topic is about compressed air. It's a very common industrial system that is used very cross wide through the manufacturing and commercial sector and hopefully you can pick some good ideas. So back in 2011 when we just started the Better Plants Challenge we had a nine unit. We were running at 100 psi very typical pressure set point for industrial facilities and our efficiency was ok. It was very standard for the system. 2016 – 2017 we did phase one of the project. We operated a lot of equipment and migrated from water cooled units to air cooled units, tried to facilitate the process of reducing water consumption as well. And that gave us about an 18 percent, 19 percent energy efficiency. But then that was the year when we set up our ISO 50001 certification and we also learned through the standard how to really dive deeper into our systems and find more opportunities and that's where we came with this multiyear effort, try to become our new compressor system into a world class system that includes a lot of automation and everything for an overall 35 percent gain efficiency. Please go to the next slide.

So just to give you an idea I will use this schematic as a reference to highlight the main things with it. So we pretty much migrated into a VFD Trim unit to close that gap as we follow the demand, the plant's demand. So the VFD keeps a very close gap and follows very closely the plant's air demand and that helped us to maintain an energy reduction. Also we installed a central master control system. This plant has two different compressor rooms located one in the south and the other in the north end of the plant. It's hard to control several units. But the master control is like the brain of the system. It helps us to keep all the compressors synchronized and running at the highest efficiency point and it also impacts the energy.

We are also tying that master control system into an energy monitoring system that helps us understand where the energy goes through the plant in real time and provides a data to our energy teams that support our decision-making process. We're also using the waste heat coming out of the units to heat up our buildings.

Located in Wisconsin is a very challenge, it's very challenging to keep our buildings warm through the year without using a lot of energy so we use a lot of waste heat to achieve that and offset that for gas usage. Then also we have been working on the end use itself. How do we reduce the need of the compressor?

And we have been challenging the plant to identifying opportunities and also we have reduced by ten psi the plant's pressure. So we dropped from 100 psi in the early 2010s to now 87. That's a huge energy impact. And we also have worked on establishing our best practices for energy teams so they can also continue monitoring and optimizing the system and make sure that these efforts are maintained and sustained through the time. Can we do to the next slide please? So try to wrap up a little bit.

The benefit of this second phase last project is a 13.5 percent efficiency increase which is equivalent about 18,000 MMBTU. Just to give you an idea we, that energy is equivalent to 1,200 tons of steel we're avoiding to put into the environment and provides pretty close to 200 to \$190,000.00 in savings per year for this plant. This is about 1.5 percent energy reduction of the overall plant and a 10 percent on the percent on the compressor. The payback of this project ended up being very well at 1.2 years and we received some incentive from the state program. So improving this system helped us, has a large impact on our sustainability goals and our bottom line business but also helps us to be more green and continue building that green foundry business. Thank you. Maria please.

*Maria Vargas:*

Yes. Thank you. Thank you so much Marco. I appreciate it. Very cool. I appreciate you doing – I know that was a challenge to get that all in there in a brief amount of time. So just before I introduce Joe, please do if you have questions make sure you use Slido because we're going to be tracking those questions and trying to get to them at the end. So if you have questions about Marco, Joe, Tim or Ana's presentation please do let us know. So thank you again Marco. Joe it's now my presentation to introduce, my pleasure to introduce you. So for everyone on the call if you don't know Joe Indvik, Joe, we work closely with Joe Indvik. He helps oversee the work we do with the financial allies as part of the Better Buildings Initiative. He's also helping on a lot of the decarbonization efforts. But let me give you an official introduction Joe. So Joe is at RE Tech Advisors. He's going to be recapping both of his financing presentations that he delivered at the summit. I went to both of those and they were standing room only.

So I know that folks will be excited that Joe is able to do that for us today. Just quickly Joe is the director of carbon solutions and clean energy finance at RE Tech Advisors, a consulting firm focusing on sustainable buildings. As I mentioned Joe works with us at the Better Buildings Initiative and he has overseen or supported more than 50 carbon mitigation plans and energy finance programs for a diverse set of Fortune 500 companies, federal agencies and national governments. With that Joe, the floor is yours. Thanks for being here today.

*Joe Indvik*

Awesome. Thank you Maria. It's great to be with you all today. Like Maria said I have the great pleasure of working with the Department of Energy and the Better Buildings financial allies to help more organizations get access to the financing that they need for energy and decarbonization projects. So I think we would all agree that we're at a very pivotal moment for climate action right now in the US and around the world. I think one really meaningful indicator of that is that nearly 40 percent of the Fortune 500 now have some sort of net zero target or science based target. So clearly this is no longer a niche topic to be discussed at ESG conferences. This is reaching the mainstream.

The new SEC rules around climate disclosures if you're not familiar are another indicator that that's the direction this is headed. Now we have to figure out how to actually achieve these ambitious emission reduction targets that we're creating. And perhaps not surprisingly financing is the single most frequently cited barrier to achieving decarbonization whether it's finding the capital internally or finding the right external vendors to finance your projects. It's the biggest sticking point for the most organizations across all sectors. The good news is there's a variety of financing options available.

There's more financial products and vendors than ever before who are solving this problem. And so with the variety of options available chances are there's one or two financing products out there or one or two partners that are going to be the right fit for you. It's just a matter of finding the ones that are the appropriate size and scale capabilities to enable your carbon goals. So my goal today is to be very quickly give you an overview of the options that are out there for decarbonization finance and give you a couple of helpful tools for thinking about how to weigh those options against each other.

So if you go to the next slide I'm just going to bludgeon you with all the juicy detail right out of the gate because we don't have a lot of time today. So what better way to start than with a flow chart. So this is the carbon financing decision tree that we put together at the Department of Energy in consultation with our financial ally network to help you kind of whittle down the options for financial products or financial structures that can help support your carbon goals. I'll walk you through this briefly but we generally split this into external financing where you're partnering with a third party like loans, leases and other structures or internal financing where you're using your own capital in a disciplined or structured way to invest in decarbonization projects.

So this isn't intended as a be all, end all solution. Any of you who are big finance nerds will probably already be noticing that there is some serious over simplifications here. But the goal is to give you a simple framework for thinking about which financial products might make the most sense given your particular organization and needs. So generally speaking within the external financing realm one of the most important questions is whether the project includes a renewable energy component or not. If it does include renewable energy that unlocks the availability of some other financing options like power purchase agreements in particular. If it doesn't include renewable energy then we're mostly talking about energy efficiency, electrification and other kind of building technologies.

So then the next big question is do you want ongoing support in actually maintaining and operating that equipment or do you want to do it yourself? If you do want support then the question is do you want to own the equipment. So if you'd like the support but you also want to own the equipment then energy savings performance contracts might make sense for you. Whereas if you want a fully, truly off balance sheet solution where a third party owns and operates all of the equipment then an energy as a service arrangement might make more sense. And actually I should note that energy as a service was probably the most popular financing topic at the summit. That session in particular was standing room only as Maria said and we have lots of great resources on energy as a service on the Better Buildings Solution Center if you'd like to learn more.

Then the next question is if you're sort of not looking for ongoing support and maintenance of the equipment then we're really talking about more simple, traditional financing structures like loans and leases. So the next question is are there specialized financing programs in your area or not. Particular PACE financing

or property asset clean energy and on bill financing can be great options. But they're only available in certain locations which sometimes makes it challenging to scale them across a portfolio. So whether or not you're located in an area that offers those kind of depends on, will determine how seriously you should look at them of course. And then finally if none of that applies then you're really looking at kind of more traditional loans and leases like commercial loans or capital leases for example.

But there are some green variants of those loans available in the form of sustainability linked loans where the interest rate is actually pegged to your emissions reduction under the loan as well as a variety of other green loans. If we then switch to the internal side of the equation – so this is various models and structures for taking your own capital, either raising it or allocating capital that you've already got to basically a dedicated source of funds for carbon projects. So the first question is do you want to create a specialized vehicle? Do you actually want to create a fund or a budget or do you want to just sort of do this in a more traditional way? If you do want to create a dedicated fund then the question is do you have capital on hand or not?

So if you've got the capital and you're just looking for a way to structure it what we've seen a lot of organization have success with is creating a capital investment fund that's dedicated to energy and decarbonization projects. Sometimes a fund like that will have expedited approval so you don't have to go through the laborious capital planning process that you often do for other major capital improvements. And some organizations have also used green revolving funds. These are particularly popular in higher education but have been used in commercial and other sectors as well which is the same idea as the capital investment fund but the savings from the project revolve back into the fund to replenish its capital balance over time. If you don't have on hand capital to deploy then we need to look at ways of raising capital, right? And so one that you probably heard a lot about lately is green bonds which are becoming very popular and have grown dramatically in the last five or six years.

But some organizations are also using what you'd call a carbon fee fund. So organizations are setting internal carbon prices and then using the proceeds from those programs to feed into a fund that they use to then capitalize energy improvement or decarbonization projects. If you're not so interested in creating a dedicated fund – so we're back at the top now – then again the question is do you want ongoing support and maintenance of the equipment. If yes



then you might want to look at a self-funded energy savings performance contract.

A lot of people think of ESPCs as a financing option but they're actually just a services contract. They don't necessarily need to be backed by financing and in fact about half of the ESPCs done are not financed. They're self-funded. They simply retain an ESCO to perform the energy services and maintenance. And then if you're not interested in outside support for equipment operation or maintenance then you're really just talking about a super traditional capital outlay which is totally finally that capex or opex investment using your normal process. So again this is not intended to be the be all, end all solution but hopefully a useful way to kind of slice and dice the universe and think about what might be a good fit for your organization when it comes to decarbonizing.

Just a couple more quick slides here. If you go to the next slide I also want to point you to the Better Buildings financing navigator. This is a resource that you're probably familiar with if you've been in the Better Buildings family for a while but this is an online tool that helps organizations find financing that's a good fit for your organization. It's a great way to explore the different financing options. It has all the stuff we just talked about and a lot more. You can answer a few simple questions to see which financing options might be a fit based on your particular goals. And then I think most importantly it provides a platform for you connect directly with the Better Buildings financial allies who might be able to finance your project.

And if we go to my final slide speaking of the Better Buildings financial allies just want to remind you all that there's a network of partners that are part of Better Buildings called the financial allies. It's more than 50 market leading financing companies ranging from big banks like Bank of America and Citi to pace lenders and energy as a service providers all the way down to smaller startups. They have committed unlike the other partners instead of committing to an energy goal or a carbon goal they commit to deploying capital to assist with those energy and carbon goals. And so if you ever have any questions about financing or you have a project that's in need of capital I'd highly encourage you to do two things. Number one, go to the Better Buildings financing navigator. Just google Better Buildings financing navigator and you'll be able to learn more and connect with allies that way. And alternatively just shoot me an email and we're more than happy to

connect you with allies in the network. And with that I will pass it back to Maria.

*Maria Vargas:*

Great. Thanks Joe. And I just want to reinforce something Joe said at the beginning and tie it back to the navigator. Part of the reason the financing navigator has been such a great tool is because there is so much innovative work being done on financing. And so it's our hope to provide information on the financing navigator that really helps you understand how you've been financing or thinking about financing projects may not be how you have to do it in the future. And so there's a lot of opportunities. And so thank you Joe for that terrific presentation and all the work you do with the financial allies and helping us think through the best ways to decarbonize and finance that. We appreciate it. Ok. Next up with have Tim McDonald from Onion Flats Architecture who is going to be recapping some of the or one of the multifamily sessions, one of the sessions designed or working with those partners who own, manage and oversee multifamily homes.

That session was Multifamily Passive House 101: Key Pitfalls and Smart Strategies. And we're excited. There were a lot of folks who really enjoyed this session. Just quickly about Tim. Tim McDonald is an architect, certified passive house consultant, tradesman and president of Onion Flats LLC, a development, design build collective centered in Philadelphia. Through his research and practice Tim and his partners at Onion Flats have developed, designed and built some of the first LEAD platinum and certified passive house carbon neutral projects in Pennsylvania. Tim I'm glad you're here. Take it away.

*Tim McDonald:*

Thanks so much Maria. Let me just share my screen here. Yeah. Really happy to be here for this sampler of the summit. Had a great time at the summit. As was mentioned I'm the development, design, build architect actually and our focus I wake up every morning to this. Buildings are responsible as we all know for almost half of all greenhouse gas emissions and this is what drives our work. And that work is around the country rather through retrofits, single family, high end single family homes, affordable housing, market rate housing, large, small scale, all certified passive house projects and all attempting to be net zero carbon neutral buildings.

And one of the things I thought might be helpful for those of you who haven't done this kind of work is maybe give you a sense of there's a lot to know about how to build a passive house building and most importantly cost effectively. There's systems that you

need to understand. There are assemblies that you need to understand, ways of metering, mechanical systems. Where do you start?

And I thought after 15 years of doing this why don't I just try to come up with a very simple step by step strategy and decision tree making strategy that allows people to look at their particular project and say this is what you should do first. This is what you should do second. This is what you should do third. And this slide encapsulates a four hour workshop that I've done in the past so this will last about 40 seconds. But the first step you need to do is to decide whether this building is going to be an electric only building. We haven't put gas into a building in 15 years. The reason why that matters is because that affects the decisions you make about your mechanical systems. It also affects whether you have one meter or multiple meters and there are pros and cons to each one of these decisions that this four hour workshop takes on.

Only after that do you then begin to talk about whether your mechanical strategies are centralized, decentralized, somewhere semi-centralized and then only after that – and this is before you design the building frankly do you even begin to talk about details like rooves and wall assemblies and slab assemblies. And so what we try to do with every project before we begin designing is create that path. In this case this client needed gas driers for this affordable housing project and that's the only reason why gas was brought into it. We try to do this with every building before we start. I'm going to show you a few projects.

This was the first project that we attempted as a passive house project, also an affordable housing project as well as a modular project which you'll see. There's townhomes for formerly homeless families so very large five bedroom houses. Became the first certified passive house project in Pennsylvania in 2012. And one of the things we like to say is its not enough to figure out how to design more effectively passive house buildings. We have to learn how to rethink the way we build them. And so for us innovating in the prefabrication space is essential. We started a modular factory in order to do this.

It's also important that with passive house building is it needs to be extremely airtight and when that happens you need to vent it right which means you have balanced ventilation which means that passive house buildings have the best indoor air quality possible. It also means that we're not heating our streets the way that these buildings on the left do like most buildings in North America. This

project is filled with light and air, good quality materials, triple pane windows and doors and a 5kw array to get the building to net zero. And at \$129.00 a square foot this was everyday code build construction costs at the time.

A couple years later we took on a larger project, 26 unit townhome development, built it at \$150.00 per square foot, again in line with everyday code build construction. Aligned these bars facing south so we can maximize southern exposure, again prefabricate in our factory. And we had kind of honed the sustainable building system that we had started in the project before. Here are those three going up. Here are the first three built. Notice the solar arrays on the roof which you'll see in a minute. This is the rest of the project. And anybody that tells you you can't do stormwater management and solar at the same time I say show them this photograph because green rooves actually keep the temperature of the roof lower which makes the solar panels more efficient. This is one of the first attempts at a blower door test to meet the pass valve standard and we beat it by 30 percent.

Right around the corner a 25 unit project called The Battery. We took on a different kind of prefabrication. We panelized the most difficult part of the building which was the thermal envelope. So this high performance triple pane windows, high performance wall, triple pane windows, exterior insulation, WRB, weather air barrier was built in a factory and shipped to site. The project got built in half the time. It's also the first time we attempted a single meter building. The tenants love it. They have a flat rate of \$50.00 a month. And we keep them honest by building this energy monitoring system that is tied into LED lights on the building and if you're living within your energy budget your light will glow green. If not it might glow red or yellow. So it's kind of a whose who for the community at large as well as the tenants and below \$170.00 a square foot. This was everyday code build construction. A different approach to integrating solar is maybe to raise it ten feet above, especially in an urban environment, raise it ten feet above the roof, have this beautiful garden and this wonderfully shaded outdoor space with these translucent solar panels. And with an EUI of 10 instead of 59 this was an 83 percent more efficient than the typical code building.

The last project I'll show you is this 28 unit apartment building. You'll notice that the kind of fundamental idea here is about wrapping the building with solar panels so it's about integrating solar in a very different way. In this case we're floating the solar panels about 24 inches away from the façade. So it's actually got

three functions. It's generating all the power for the building but it's also very importantly shading all of these windows, keeping that sun out in the summertime but letting it in in the wintertime. And it's also a visual privacy device. People can't see into your unit. And this is actually a net positive energy building and it's the first time that we've been able to make utilities a revenue stream. How about that? So last slide, encourage prefabrication please. Encourage vertical integration. Keep things simple. Educate your owners and tenants about systems and utilities. Leverage those savings, those utility savings to actually build more housing, particularly affordable housing. Please make all electric buildings and include PV and passive house as part of your capital stack. So thank you very much.

*Maria Vargas:*

Thank you so much Tim. I'm watching some of the questions come in on Slido. So just a reminder please, Tim, somebody already wants to know which one of those projects was your favorite. So hold that thought because we're going to get to that question when we get there. But as you guys, all the attendees have seen so far and we'll see when Ana does her presentation there's a reason why we asked each of today's presenters to share with you the presentation they gave at the summit. Really innovative ideas, new thinking, emerging ideas and technologies and the commitment to see it through. So with that thank you again Tim. And our final speaker today is Ana Duffy with Hudson Pacific Properties. She's going to be recapping her presentation from a session we called The Good Fight: What's Next after Carbon Neutrality. Just quickly about Ana.

Ana is a sustainability manager at Hudson Pacific Properties with four plus years of experience in the commercial real estate and ESG programs. In her current role she manages key sustainability initiatives such as driving progress towards Hudson Pacific Properties' science based target and net zero waste by 2025 target and furthers the company's decarbonization strategies including efforts to reduce embodied carbon in their developments or redevelopments. So Ana with that we're going to turn it over to you. Before I do that let me just send one reminder out to, one more reminders out to attendees. Please if you have questions on Slido or want to upvote the questions there please do so. Apologies Ana. Now over to you. Thanks so much for being here today.

*Ana Duffy:*

Thanks Maria. Good morning everyone. As Maria just mentioned I'm Ana Duffy with Hudson Pacific Properties. We can jump to the next slide please. So quick overview of Hudson Pacific Properties. We are a vertically integrated REIT. We own and

operate about 20 million square feet of office up and down the west coast from Vancouver all the way down to LA. We are a public company listed on the New York Stock Exchange and in addition to our office portfolio we have a studio platform called Sunset Studios where we have about 35 sound stages and studio lots located in Los Angeles and a couple in development, one in London and another one in the valley. These are some of our top tenants. We serve primarily tech, media and entertainment tenants. We're really fortunate that many of those tenants are really focused on ESG as well so we get to partner with them on some of our initiatives. Next slide please.

Cool. So here's a quick overview of our Better Blueprint ESG platform. I know there's a lot of text on this slide. I'll try to break it down for you guys. So our Better Blueprint platform has three pillars, sustainability, health and equity. And it really encompasses our entire ESG strategy. So I'll obviously focus on the sustainability realm today and kind of run through some of those bullet points high level. So we achieved 100 percent carbon neutral operations in 2020 for the first time. We're one of the first major North American landlords to do this. We have roughly 82 percent of our in service office portfolio is LEAD certified, 71 percent is Energy Star certified. We're focused on getting those certifications.

We are also focused really closely on project innovation. So we have invested \$25 million in Fifth Wall's climate fund and kind of thinking a little bit more closely to our properties we have Better Blueprint action plans at all of our operating properties. And at any of our redevelopments or major repositioning we develop what we call sustainable design visions which incorporate required elements for each redevelopment project and ambition elements for each projects. I'll let you guys read through the health and equity items on your own or right after this webinar. And just some of our accolades here at the bottom. In 2021 we won the NAIOP Developer of the Year Award. We were a GRESB sector leader and I am very much looking forward to get our GRESB submission done this year and seeing how those results come back. And we are an Energy Start Partner of the Year three times and going. So some of our accolades there. Jump to the next slide. Cool.

So our approach to carbon neutrality. I mentioned we first achieved carbon neutrality in 2020 and we did this through a four part strategy that followed really closely in line with Department of Energy decarbonization prioritization waterfall. So first things first

we focus on energy efficiency, minimizing energy consumption as much as possible in our buildings through projects that are familiar to many of you guys on the call, LED lighting, VFD installation, roof replacement, anything that enhances the efficiency of our buildings. Then we look at onsite renewables. So we have a couple arrays across our portfolio.

We have, let's see, three rooftop solar arrays and then one building with building integrated photovoltaics where the solar panels are actually built into the façade of the building. And we're really focused on increasing our portfolio of onsite renewables. And then we look at offsite renewables and renewable energy certificates. So we enroll in 100 percent or local 100 percent green power plants wherever, where our utilities offer them and they're cost effective and then we purchase renewable energy certificates. So this started back in 2018 with a directive from our CEO to take all our buildings 100 percent, powered by 100 percent renewable electricity and so we've been doing that since 2019 when our REC agreement took effect. And our buildings have been powered by 100 percent renewable electricity that's offset all of our scope two emissions from electricity consumption.

Once we've done all of that we have only our scope one emissions from natural gas consumption on site remaining and we offset all of those with carbon offsets. We have pretty strict criteria for our carbon offsets. They must be third party verified, located in North America. And we selected landfill gas to energy projects as it relates to the natural gas consumption in our building and waste generation in our buildings as well. So we first achieved this five years ahead of schedule in 2020. We will maintain our 100 percent carbon neutral operations on an ongoing basis. And what does this really mean for HPP? So it covers all of our operating properties across our office portfolio and Sunset Studios platform. We account for both landlord and tenant emissions in our scope one and two inventories. So that means any tenant who rents space from us has 100 percent carbon neutral office space.

We've had a really cool kind of initiative forming where we're getting more and more tenants asking for attestation letters about their carbon neutral space so we're providing them information on our RECs and offsets so they can actually claim the benefits of leasing space from us in our carbon neutral buildings. And then Ernst & Young assures our carbon neutral commitment. This is really important to us so we really have a rock solid foundation to make these claims. Let's jump to the next slide.

So what's next after carbon neutrality? We knew we couldn't just stop there. Like I said we'll maintain this commitment but we knew we needed to further progress and reduce our absolute emissions so we set a validated science based target in 2021. To achieve this we're really focused on broader implementation of onsite renewables and continuing to enroll our properties in those local green power plants so we can encourage additionality in our markets. And as we account for progress towards our science based target we'll reduce or we'll exclude offsetting instruments like unbundled RECs. And we have additional climate goals as well continuing to reduce energy consumption, achieving LEAD and Energy Star certification. And more importantly we're really focused on reducing our scope three emissions.

So we're committed to measuring all material scope three emissions annually including but not limited to embodied carbon. Embodied carbon makes up roughly 80 percent of our company's total footprint. But we have about 100 operating buildings at any given time that are all carbon neutral and five development projects. Those five development projects make up 80 percent of our total carbon emissions. And so we know we need to focus really closely on decarbonizing our supply chain and reducing embodied carbon in those developments. And move on to the next slide. I think that – ok, so that's it. We can skip this one and I'll pass it back to Maria.

*Maria Vargas:* Wonderful. Thank you Ana. We appreciate it. Ok. So now I'm going to invite the panelists to turn on their camera and we'll get to your questions. So thank you again to Marco and Joe and Tim and Ana for being with us today. We really appreciate it. I think there's questions for all of you. But Tim since I already teased you with your question I have a question for you. These projects are beautiful. Do you have a favorite? And I would add and why?

*Tim McDonald:* Well as I responded I have three kids and just like them I love each of them for different reasons in different ways and not one more than the other. So each one just like my kids they have their issues but I treat them – my buildings are very similar to my kids.

*Maria Vargas:* Interesting. Ok. But so we're going to push you a little bit harder on that Tim.

*Tim McDonald:* Ok.

*Maria Vargas:* So can you just tell us one cool thing about each of your kids and something that maybe surprised you as the buildings went up? I



mean the cool thing about the solar panels being high so you have space underneath that's – anyway, the prefabrication. I like the kiss too. I'm going to use that today.

*Tim McDonald:*

Right. I'd say in some ways the knowledge is cumulative because with each project that we've done and I think I showed them in sequence, the earliest to the latest projects. So the most recent project which was the last one, the wrap solar façade. I mean I was really afraid of taking that on to be honest. The idea of floating this entire array off the building but I've got to – and there's we had this really great article that came out from the architectural critique in Philadelphia who said that she was questioning the concept of beauty when it comes to making high performance buildings. And she said maybe we have to reconsider what beautiful means. And so she was putting it out there that maybe this wasn't the most beautiful building in the world but maybe that's what we need.

So I kind of appreciate that. Maybe we're starting to go between. We're starting to talk more about the relationship between beauty, architecture and climate change. Great. That's a great topic to have. I think the other thing I like about that building is it's a totally decentralized mechanical system strategy and I think that is what has driven us from that point into several projects we're doing right now. We've had lots of problems with centralized ventilation heating and cooling systems. The project before that, the one with the huge canopy I just love that building too just because of the way it looks and the lights on it communicating what tenants are using. So those are a couple of examples.

*Maria Vargas:*

Awesome. Thank you Tim. Joe there were –

*Joe Indvik*

One thing Tim said there, Maria.

*Maria Vargas:*

Go ahead. Go ahead and then yeah, go ahead Joe.

*Joe Indvik*

I just had to respond to what Tim said. You mentioned about kind of redefining beauty in the build environment. One of my favorite kind of science thinkers of all time was Richard Fineman who was pretty well known. This was back in the '50s and '60s and he kind of like the Carl Sagan of his time and he often talked about this conversation he had with an artist who said as a scientist if you can understand everything about how a flower works, how can you appreciate the beauty of the flower. And he said I actually can appreciate its beauty in two ways, both the way it looks and makes me feel but also like the beauty in the mechanism of it, the beauty in the complexity. And I feel like what you said resonates. Right?

The building can be beautiful not just aesthetically but as the way that it operates. I think that's a cool way to think about it.

*Tim McDonald:* Totally. Yeah.

*Joe Indvik* Sorry Maria. Just had to get that.

*Maria Vargas:* Thank you Joe. No, no need to apologize. I think that's terrific. So Joe we're going to ask you a question, then Marco, then Ana. So Joe question for you there were a couple so I'm going to try and fit two questions in one for you Joe. One is Joe could you elaborate on what self-funded energy saving performance contract is a bit more and then the other question specific to the financing Joe was if you could speak to why you believe that I think its green bonds have been so popular over the past couple of years. So if you could take some of those. And then Marco I'm coming to you next.

*Joe Indvik* Yeah. happy to. And I put a couple of links in response in the slide also. If you want to go click on those links you can learn more there. The first question on how a self-funded energy savings performance contract works is basically the same way as a financed ESPC. You get all the same services from the energy services company. If you're not familiar with ESPCs typically an ESCO will come in and install the equipment, manage it for you and then typically provide some sort of savings guarantee or a savings threshold and they'll sort of make you whole if you don't achieve the deemed savings. So about half of those transactions are financed meaning that the up front cost of the equipment is sort of procured through a loan.

But half of them are not financed which basically means the organization doing the ESPC just pays for that upfront cost themselves. They still get the savings guarantee. They still get all the other services. There's just no financing. So contrary to what many folks think ESPCs are not the same thing as financing. They're actually two separate transactions that are sort of bundled together. And then to the second question why green bonds have become more popular I mean I think it's all part of this big zeitgeist we're seeing towards decarbonization. More organizations are doing more projects focused on decarb and more investors importantly are interested in investing in decarbonization.

Something like more than half of investors now say they would consider not investing in an enterprise because of its ESG performance or lack thereof. So there's a lot of investors that want to put capital into green purposes. Green bonds are a great way to

raise capital quickly and at scale for sustainable uses. Sometimes you can raise that capital at preferential rates. No always. But a green bond effectively works the same way as a regular bond. It just requires that the proceeds be used for certain green projects. The other I think the big one is also that green bonds can be used to attract a new category of investors that your organization has perhaps not had before so it can help you diversify your investor base in addition to raising more capital.

*Maria Vargas:*

Terrific. Thanks Joe. And Marco I got another question for you and this one isn't on Slido. This one came in on an email for whatever reason. But they, the person is asking sort of what do you think the next big challenges are for industrial facilities as they decarbonize as you're looking across your own facility, speaking from your own vantage point. What do you think the next – you've done great with compressed air and I think people were really interested in that. And then it's really what are the next big challenges that you think industrial facilities will really face?

*Marco Gonzalez:*

Thank you Maria. I think that's a great question. The industrial factor – and I will talk about the foundry business. I think there is a lot of opportunity to achieve decarbonization. It's a challenge because we definitely continue improving our energy efficiency. And compressed air is just a small part of it but we also do several in the other industrial systems and I will kind of summarize three main topics. We work hard in continuing our operation and maintenance daily improvements. How can we do better every day the way we do it? We also look at hard and work hard on the process production group. How can we produce castings using less energy every day? And that also helps us on being carbonized or reduce our impact.

And then of course the capital investment. I think the challenge for decarbonization will be mostly related to scope one emissions for industrial spaces and thermal processes. We cannot decarbonize faster than the technology is developed. So I think there is a little bit of a sector cross wise for different production processes. You would have opportunities to decarbonize today but there are a bunch of processes that are waiting for technology to be developed. So I think that the key of this is continue working to identify your baseline, identify your opportunities and do your continual improvement culture and I think that has been one of the success of Waupaca Foundry that it's part of our company culture. We just try to do better every day and over the last ten years we have reduced at some plants even by 30 percent our energy intensity.

And then of course it makes you energy efficient but also put less emissions in the environment. And we, this partnership with the Department of Energy I think is a great asset for us because we have access to technology development and great resources that you guys put available for the industry that help us to accelerate that technology transformation that everybody. So it's a challenge. We will continue working towards that. We are looking right now to buying and bringing more renewable energy into our facilities for offsite BPPAs and onsite solar projects that will come later on the portfolio as we transition towards our 2030 or 2050 goals. It's a big challenge. It requires commitment and the success is that when you have a solid executive team committed to decarbonize an industry and you find and dedicate sources toward that and align with great partners like DOE and several other companies in the sector. I think that's where you find a great place.

*Maria Vargas:* Great. Great. Thank you Marco. I appreciate it. Ok Ana, question 'cause I want to try and get to as many of these questions as we can. Ana this one has a couple of upvotes. Do you have examples of going from fossil based building services to heat pumps and other electrification options so?

*Ana Duffy:* Let's see. Specific examples not off the top of my head. I can say that we are thinking about this specifically in our markets that we know are going to require decarbonization of our building. So I'd say that San Francisco, San Francisco recently built out a climate action plan that's going to require alle existing buildings to be all electric by 2035. I'll say I rely really heavily on our engineering management team to think through the technicalities of what that's going to look like moving from natural gas boilers to heat pumps or electric boilers or on site renewables and electric boilers, whatever that combination is going to look like. But we are thinking about it. We have a repositioning project where we're actively evaluating the feasibility of going all electric via an electric boiler. And I mean I'm honestly thankful for the regulation in this regard that things can go further and we can get off fossil fuels. So no specific examples. Sorry to let you down on that side but we are thinking heavily about this.

*Maria Vargas:* Ok. Great. Let's see if we can get to two more questions before we close out because anybody who knows me knows we will end on time. So just a Tim I think this is a question for you. How does the kilowatt hour output of solar panels on the sides of buildings compare to rooftop solar? And how did you get passive light to be blocked into the summer and let into the building in the winter?

*Tim McDonald:* So I quickly answered that but obviously so the longest wall on that building is facing south. The short walls are facing east and west and we have panels on the east and west. And obviously they produce less because they're only capturing the sun as its rising and as its setting. But the interesting thing is as its rising and setting its actually a vertical orientation makes a lot of sense because the sun is more perpendicular to the panels at that point. So I don't have a percentage for you. I don't know exactly the breakout between them. But certainly the east and west produce less. But you've got to remember those panels are also functioning as shading devices too so they're really essentially. Now what was the second part of that question?

*Maria Vargas:* Let's see. The second. And how did you get the passive light to be blocked in the summer and let into the building in the winter.

*Tim McDonald:* Got it. So we had a strip of solar panels, a strip of solar panels and a space between them where the windows are. Right? So above and below the windows. And the fact that they were projected out 24 inches from the façade is what – the sun is high in the summertime. Right? So that allows – we actually calculated it through our models. That allowed us to determine precisely where that panel would be to block the sun out that is high in the summer but when it goes low in the winter it comes right into the unit.

*Maria Vargas:* Wonderful. Thank you Tim. I'm trying to make sure – I think we have time for one more question. Let's see if I can – so Ana maybe this one. It was great to hear Ana's focus on embodied carbon. Are you considering whole building and building material's reuse in addition to new low embodied carbon materials? Ana that was to you.

*Ana Duffy:* Yeah. So we have a couple examples of projects where we're doing embodied carbon studies. One is a project called One West Side in West LA. So we, it's an adaptive reuse project where we're transforming an old kind of rundown – what was an old rundown mall into a brand new class – or not brand new, class A office space for almost entirely preleased to Google. So that's an example of an adaptive project where we saw 33 percent reduction or avoided emissions in embodied carbon. We're reusing the steel and foundation for that project. And then we have some new ground up developments. One specifically in Seattle where we're preparing low embodied steel and concrete so we're looking at both avoided emission through adaptive reuse and active procurement decisions to reduce our embodied carbon there. Yeah.

*Maria Vargas:*

Wonderful. Well I have to tell you attendees on this call your panelists have done amazingly because without being asked they have replied to a lot of your questions on Slido. So just check Slido because I know there are questions we didn't get to but many they've taken the opportunity to reply to make sure you got the answers even though we didn't cover it here. So thank you. But I just want to say thank you again to Tim, Marco, Ana and Joe for being with us today. And then for those of you who joined us as attendees if you enjoyed today's webinar and want to keep learning we encourage you to check out our 2022 summer webinar series. We have a great lineup of presentations going on throughout the summer. It goes through August on a wide range of topics from resilience to cheap energy efficiency programs. So the information on that is on the Better Buildings Solution Center.

So thank you again to our panelists for being with us today. And those of you who aren't already 'cause I was sort of amazed at how many folks haven't been to a summit. So if folks are not already following Better Buildings on LinkedIn or Twitter for the latest news please do so. You can find our handles, you see that on the slide. And then last but not least you will receive an email notice when today's recording slides and transcripts are available on the solution center. Thank you again to the panelists. Thank you to everybody for joining us today and we hope to see you at the 2023 Better Buildings Summit. Thank you everyone. Have a great day. Bye bye. Thank you.

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