

Hannah Debelius: All right, hello everyone and welcome to Day Three of the 2020 Better Buildings, Better Plant Summit. I'm glad to have you all here with us today to kick the day off.

We are going to be moving beyond energy today and talking more about energy and water. If you could show the name of this session here.

We have a wonderful set of speakers today from three different sectors, so we'll really be able to highlight creative solutions and best practices.

But before we get started I do want to cover just a couple of housekeeping items. The first is that today's session will be recorded and archived on the Better Buildings Solution Center. So we'll definitely follow-up with all attendees when that's available. On the Solutions Center you can click on the links and go back and do the slides. Additionally, you all probably noticed that our attendees are on Listen Only mode, which means that you can't unmute yourself, however, you'll still have plenty of opportunities to engage with us and ask questions and I'll tell you more about that in just a moment.

Additionally, if you do end up having any audio or video issues or tech issues that we can assist with you can go ahead and put that into the Zoom Chat and we'll have someone on tech support try to assist you with that.

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I am your moderator today. My name is Hannah Debelius and I'm a fellow in the Building Technologies Office at the Department of Energy. I have the privilege of working with the Better Buildings Program, most closely with commercial real estate and higher education sectors, but also on a couple of other opportunities.

Today on our session we're going to be starting off with a bit of an introduction to tell you what's been going on with Better Buildings and Water over the last year or so. Then we have three wonderful speakers, Jaime Gonzalez-Brana from the Water – who will be covering water savings strategies at Owens Corning; Joan Kowal, who, we, we, excuse me, will be covering water reclamation at Emory University; and then Ken Rosenfeld, who will be covering the BOMA W-squared Challenge. We'll also save plenty of time for Q&A so that everyone in the audience will get an opportunity to ask the questions of our different panelists.

So, um, next slide please.

Speaking of Q&A and how you'll engage with us today we'll be using a platform called "Slido," to do that polling and interactive engagement. So right now if you could either open your mobile device or a separate browser, you're going to go to slido.com, you're going to put in the event code DOE and then from a dropdown you're going to choose this session, which is called "When Progress Flows." So again, open up a new browser or your mobile device, slido.com, enter the event code DOE. You might have to click a Join button there and then you'll choose When Progress Flows from the dropdown. You also have the opportunity to just click the link that is now in the Zoom Chat if you have that open.

In addition to doing some polls in this we'll also be doing Q&A. so at any time if you have a question you can go over to the Q&A tab and put in your question there and we'll get to it at the end of this session.

So hopefully everyone has had a moment or two to log onto Slido. So with that I think we're going to go ahead and launch our first poll. The first one is an easy question I hope, which is just: What sector are you from? All right coming up strong with higher education, which is wonderful, especially since one of our speakers is from Emory University. Industrial and manufacturing another sector represented here on our panel today. State and local governments, multifamily housing, commercial real estate, wonderful. Some contractors. All right excellent. It looks like a big showing from industrial and manufacturing. And it looks like also Slido must be working for, for most people.

So with that I'd like to launch our second poll please. This is: Has your organization made a public commitment to a water savings goal and if so what is that commitment? So this is an open-ended and we are curious if you have made a commitment to a water savings goal?

So maybe it's a – all right some, some "No's," some "Yes's." If it's a "Yes" you can put in another response, because I'm curious to know if it's a percentage, um, 20 percent achieved, just had another 20 percent. I wonder if that's one of our Better Buildings water goal achievers, which would be wonderful; 15 percent reduction, 10 percent, 20 percent, all right. Excellent and then some "No's," well I hope that for the "No's" that have joined us today that you

get some tips and perhaps you'll be interested in setting a goal or perhaps even join the Better Buildings Water Savings Initiative here. We can work with you on that. Okay so 2 percent per year. So it's interesting I'm seeing a mix of you know annual goals and then larger percentage goals.

All right I think we can go ahead and launch the next poll please. Which is that we are wondering if you all could help us with a little bit of feedback for our program here, which is: Would you be interested in joining the Better Buildings Water Savings Initiative by committing a portfolio-wide water savings or instead participate in something that's a solutions-based partnership without the water savings commitment? So what we're asking here is if you'd be interested in you know kind of that data and commitment piece to pursue or if you're interested in more something that's resource based and it's creating solutions?

All right a lot of both either, which is great, because that draws on the things we're doing for Better Buildings already. Okay and a lot of interest, a third of you, about for commitment to a solution-based partnership. And I will say that we've actively you know reorganizing and redoing a bit of our water resources and how we present those in the Better Building Solutions Center, so I think that for those of you who might be interested in a solutions-based approach we have some, some options that you can checkout already.

All right excellent. Thank you all so much. We've got just two more polls for you before we get into our session today. So we can go ahead and launch the next one, which is: We want to know what are the main barriers of your organization that are preventing greater water savings? So what's the challenge here? What's, what's preventing you from achieving those, those goals that we heard about a couple of polls ago?

All right generating organizational buy-in is coming to the top. That's interesting, because actually yesterday in the Waste session that also rose to the top of a really large challenge, so that's interesting feedback. And monitoring and tracking data for sure. Isn't data always the challenge there? Okay and then also budget and financing. Yeah, certainly I know you know with the, with the effects of the pandemic as well a lot of change in budget and financing and that's rising to the top and especially for all of our higher education partners that have joined the call today. All right, wonderful, thank you so much for the feedback.

We are going to launch our last poll here which is: What type of resource would be the most valuable to your organization? So your options here again is a solution is what we refer to this kind of a case study or you know it could be like a tool, like a solution at-a-glance. Peer exchange is what it sounds like, it's a webinar and it's getting people together to really just share you know laterally options they have. And then assistance with data access is kind of traditional Better Buildings route of technical assistance and, and with our data team.

All right I'm seeing a lot of answers for solutions from other Better Buildings partners, which is, which is great to know. And peer exchanges. Good that makes me excited then for our Q&A today, hopefully you all have some good questions for your wonderful peers on the line.

All right, excellent. Well thank you so much for using Slido and also getting setup and helping us out with those polls. I think that also gives our speakers a little bit of a better idea of who we have on the line today and what you might be most interested in.

Before I introduce our speakers, I have a couple of other things that I'd like to go through on the Better Buildings side of things for water. The first is just talking a little bit more about the Better Buildings Water Savings Initiative. It sounds like we might have some partners that are former goal achievers or currently in the program pursuing a 20-percent reduction over 10 years. So that's great and that is the Better Building Water commitment.

And when you commit with that you have access to technical assistance, recognition such as you know through goal achievement, but also with those solutions that we just talked so much about. Then also anyone can go into the Better Buildings Solution Center and access proven solutions and resources. As I just mentioned we just made some updates to the, to that page and we'll continue to do so. So when these slides are available to you you can go ahead and click that link.

I also would like to give a sincere congratulations to our 2020 Goal Achiever for Water, which is the University of Nebraska Medical Center. They've had the incredible accomplishment of 23 percent water use intensity reduction over 7 million square feet of the portfolio this year. They've also published a solution with us on employee engagement programs. It's really excellent and I can't understate what a, what a huge commitment that was for them to undertake and just a big congratulations for achieving that,

especially this year when we know what a trying year it's been overall and especially for our healthcare facilities, so congrats University of Nebraska Medical Center.

They also have joined a wonderful list of other goal achievers for water that you can see here. For the last couple of years we've had a lot of goal achievers, a strong present or a strong representation from the industrial manufacturing sector which is great. Perhaps that's what also is drawing people to our session today. It's great and you can find solutions from all those people on our Better Buildings Solutions Center.

With that I'm excited to dive into our panel. Again, we have three wonderful panelists and I'll be introducing each of them before they speak. But if any time if you have questions for our panelists you can go over to Slido and you know type in your question there or if you see another person's question that you like you can hit the little Thumbs-Up icon and that will submit a vote for it and questions that have the most votes will come to the top and so we'll be able to prioritize those to the Q&A section.

So with that our first speaker today is Jaime Gonzalez-Brana and he's a waste education, excuse me, the waste reduction engineer for Owens Corning's Composite Solutions Business. He's been with the company for three years and has been in his current role since 2018. So thank you so much for joining us and Jaime you can take it away.

J. Gonzalez-Brana: All right, thank you very much for the introduction Hannah and good morning everybody. I'm very exciting to be here today with you and sharing some of the initiatives that we have at Owens Corning on regarding water reduction, reusing creative solutions.

For today's agenda –

Hannah Debelius: Jaime, sorry to interrupt, could I just ask, I think you might have forgotten to turn your camera on and we'd love to, to see you engage with us.

J. Gonzalez-Brana: Oh yeah my apologies, there we go.

Hannah Debelius: Thanks, thanks.

J. Gonzalez-Brana: Better?

Yeah so for today's agenda I would like to start off with talking a little bit about Owens Corning, our organization. Then I will be talking a little bit about you know Owens Corning's sustainability efforts, goals, and progress. Then at the end I would end the session talking a little bit about some, some of the projects we have ongoing and have implemented in, in our plants regarding you know water conservation, reusing this water, and, and water reduction as well.

So to start off Owens Corning at a glance, so Owens Corning is a global enterprise with 2020 sales of \$7.1 billion dollars. We have 19,000 employees and are present in 33 countries. For 66 consecutive years we've been part of the Fortune 500 Company. We serve the residential, commercial, and industrial markets. Our three main businesses are insulation, roofing, and composites.

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So Owens Corning innovation is all around us. We see it how we move, where we live, what we do, how we power our lives. So each of our businesses is a world leader in delivering a variety of insulation and roofing products to keep our homes, commercial buildings and the people in them safe, comfortable, and dry. We also produce a glass-fiber in engineered composite materials that is used in, in everything from automobiles, bridges, wind energy, and personal electronics just to name a few.

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So what sustainability means to us, to Owens Corning as you can read the definition there, for us it means meeting the needs of the present while leaving the world a better place for the future.

So how do we assess our progress of this aspiration we have, right? So we do the math, we do want to be a net-positive company aspiration, so we look at you know where we are on our positive impact or our handprint. You know that should be greater than our negative impact, our footprint on this.

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Yeah, so we, we consider the future in everything we do at Owens Corning. So these are the four pillars that represent the comprehensive global and sustainability strategy that guide the way we drive and execute and obtain our goals.

The first pillar: safety, health, community. So we have managed to reduce our injuries over 90 percent since our 2020, since our baseline year of 2002. From the operations pillar we at Owens Corning was among the first companies to set a holistic footprint on reductions goals. From our product and supply chain pillar our sustainable and product strategy includes being leaders in transparency. And lastly, innovation and collaboration pillar, we work with our customers to improve energy efficiency and durability of their products.

So reducing our environmental footprint we do, we, we have very ambitious goals for, for this new set of goals for 2030. We aim to cut the negative impact of our operations in half. In this slide right here you can our six goals that we're trying to achieve. So we're looking at reducing greenhouse emissions from our operations by half; cutting our emission of the VOCs and particulate matter in half as well; switching to a hundred percent renewable electricity; sending zero wastes to landfill by, by the end of 2030; and also the focus of this goal is you know cutting in half the amount of, of water we take from the local water supply; and we also want to develop biodiversity goals by 2025.

So this is just a quick slide on, on our progress from our set of goals of pass goals from 2010 to 2020 on the progress on that. So as you can see here we, we have met four out of our six objectives in primary energy and greenhouse emissions, particulate matter, and water. Toxic Air emissions and waste to landfill we're, we're lacking a little bit. I think for our company the biggest challenge has been you know achieving our waste to landfill goals. As you can see from this slide we are far away from that target.

You know the focus of this session today is water. As you can see we achieved our goal, exceeding it by 8 percent for, for this set of goals.

So since then we, we have a new set of goals and the progress from 2020 towards that, that set of goals to 2030 we, we aim to cut in half the amount we take from local water supplies in places where is water is limited in quantity or quality. So you know based on our performance targets, we have two different ones. So the first one is 50 percent aggregate intensity reduction of water withdrawal in high water-stress sties from 2018 baseline.

So as you can see from the chart right there you know from our baseline year 2018 we have achieved a 10 percent improvement from the base year. And then the other performance objective is it's

you know remaining flat or reducing aggregate water withdrawal intensity at all remaining sites from 2018 baseline. And we have achieved a 20 percent improvement so far. So we, we have made good progress, but you know we're, we're going to keep making that progress in order to meet our 2030 goal.

So at Owens Corning we're committed to sourcing and using water wisely, so a little bit about what is our strategy and approach. So we, we look at five different pillars here. So we do have a sustainability mapping tool during the development of full or new and significantly modified products. We also perform lifecycle assessments and product stewardship reviews of our products. Then the three other pillars that I'll, I'll be focusing a little bit today and sharing some of those projects with you guys are increasing water efficiency, recirculating water, and recycling water. So this is what we do – this is our strategy and approach into reducing you know our water goal.

So I want to talk a little bit about you know this reuse category first for the product that I'll be sharing. This project is from our composite side of the business, from our glass performance facilities more specific.

So just to give a little bit of background on where, where the wastewater from this process comes from. So as you can see to your left side on the first image, we, we, like I said this is from our glass performance side of the business, so we produce those glass fibers. So as we can see from this image we, we see the glass rings you know hanging from the bushings. And at the very top we, we do have a spray ramp that is used to spray some water in, in the glass. So you know it provides some cooling for the glass. Then at the bottom there in the middle we have the binder application that we, you know the generates some, some you know water as well that you know falls into the next floor, which is the first floor and provides some, some of that waste water.

So for the second first floor we're looking at the wander level. So this is where the glass fibers are winded and we do get some you know some, some water from the spin affect of the cakes that is you know released to the, to the you know to the waste tunnel which is in the basement.

So in the basement this is basically where we collect our, our glass waste, so our, yep our glass waste fibers and also this waste water that I was talking about. So this could be the hoppers you know overflowing, the, the water going on the sides of the image, or you

know we do have some hoppers as well that have some holes on the side, so we can drain that water as well. So from this process we did implement a you know a water, a wastewater plant treatment. And the first step in here is that it goes to the equalization tank.

So if you can go to the next slide.

The first step in here is the equalization tank. So here is where all, all the residual water is, is received, is received. The purpose of the equalization tank is that it acts as a buffer, so it collects all the incoming water that comes at fluctuating rates and then it passes onto the next step in, in the treatment at a steady flow rate.

So step number two is the dispensers, which is where the physical and chemical treatment happens. Step number three, moving on, is you know the first decanter we have. So this is where the solids and the liquids are separated. From here on that, that wastewater goes onto the biological tank. Here's where you know this biological tank is pumped full of oxygen and by aerating the waste water it increases the microbial growth which speeds up the composition of the organic matter that's still in that water that we need for this step.

In step five we have a second decanter as well. Again, we're, we're separating some of that solid from, from liquid. Then we get to our last step, which is step number six, which is reverse osmosis, where here we separate the, the residual water and, and the reject water from the process, so the majority of the contaminates are removed from here.

So from here so it would be 50 percent of that residual water goes back into the cooling towers, that's where it's being used. The other 50 percent, which is the reject water, goes into irrigating the company fields.

For this project you know by implementing this wastewater treatment system the plant was able to reduce consumption by, by more than 100,000 cubic meters per year, represented a \$100K you know dollars per year in savings. So very significant amount and we're looking at the project cost and the payback. You know this project cost was around \$200,000.00 and we got a payback of four months. So very, very exciting project we had at that plant.

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So for the rain harvesting system the, you know one of our facilities was able to you know identify that they could use an alternative source of water in harvesting rainwater and this would be captured and diverted to storing the rainwater tank as you can see in the picture below. This is typically collected in roofs and pavements.

You know so like I was mentioning one of our facilities you know implemented and installed this kind of system. The rainwater is mainly used in the cooling towers that feeds the furnace, the refrigeration, radiators, and, and so on.

One of the things that I want to mention here where you know when the plant was considering you know implementing a, a rainwater harvesting system was that they were looking at the intended use of the harvested water, right, because this would determine the type of treatment of equipment that the system would need.

The other thing is that you know you need to determine if you know you get a decent amount of, of rainfall in, in the area of your plant that would be adequate for the application. Also another, another good rule of thumb would be you know choosing a location that has multiple applications that can use rainwater. So for example this specific example for, for our plants we, we can use this in the cooling towers, as well as the irrigation system at the facility.

So one of the things when we're looking at you know sizing the tank, the rainwater tank we, we want to look at you know determining how much rainwater is available for harvesting. So you know what the plant did is they looked at 2015 to 2017 to estimate the amount of monthly rainwater that they would get over a typical year. So they would be able to estimate how much they can collect from the rooftop or, or the pavement at this location.

Aside from this you also want to estimate you know how much of that application's water demand over the same period just so that you're able to compare if you know this harvested water will be you know a significant portion that you could use to replace in that application or not.

So if you go to the next slide you know using this you know different set points of data the plant was able to you know determine the optimal storage tank size. In this example the tank capacity for this it's 1,500 cubic meters. In this slide you can also

see some pictures of the project from start to finish. So you can see the first picture and you know digging the hole. You know installing the tank and pipes and integration, all the way to the fence closure and the pumps and luminaries installation.

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Okay, so this is the water savings kaizen opportunity that I want to talk about. And before I go into detailing to this opportunity I want to highlight you know the great energy program that our company has. That has enabled for the opportunities like this to come along. So just a little bit about our energy program.

You know in order for this to be so successful as it has been you know there has to be a lot of engagements from the plants. So it entails having you know energy champion at each of our locations and you know the energy champion you know managing an energy team that, that you know can assess, you know energy kaizens you know or some of you might call it "treasure hunts," you know assess different equipment, you know best practice sharing and also attend the monthly call that, that we have for, for the composite business in this area.

So how does this tie to this? We usually don't have many water kaizens. Like I mentioned we, we, you know we focus more on the energy side, but one of our plants was able to you know use this methodology, they had used in past in the energy program, right? And this energy kaizen event can either come from the plant, the plant energy team or they can also be initiated you know by corporate, by, by the energy engineer, right?

So you know the plant was able to integrate what they had learned from, from previous kaizens and doing a water kaizen saving. The first step for this was you know putting a team together and creating a water balance of you know of the plants. So looking at you know the water intake, you know water in, water out, where are your losses? You know looking at the different you know pieces of the process and you know how much you're consuming at each stage of the process.

Then you know the second step would have you know looking, looking at that assessment, you know having that team and brainstorming and collecting ideas you know to, to see what, what they can do to improve you know the water consumption.

So for this application specific we're looking at the picture on the right. So this is the basement level at one of our facilities. You know they do have a shredder at the bottom of the basement that they use to shred the material to, to facilitate material handling. The way that, that the waste is collected here and is generated it happens at the, at the forming level, at the bushing. So whenever there's an upset in the position or where we call a "breakout," the glass would hang and would immediately start dropping onto, onto the basement, right, onto the shredder.

As you can see in there you know in order to push those fibers efficiently into that shredder water is used. So during this kaizen what was noticed is that you know this water was continually being used and there was too much flow. As I mentioned before there's only need to run this water when there's, when there's a breakout. When there's a breakout in, in you know in the process to where there was some deposition, so there's really no need to you know run that water 27/7.

So during this kaizen it was you know assessed that you know we, we needed to stop that flow and just do it as needed whenever there was a break, a breakout. So step one you know was reducing that flow manually and just looking at the you know the savings and the flow of the water. Then the second step involving a little bit of capital was automizing that process to open that water valve to push the glass fibers only during, during that breakout.

So in doing so the plant was able to you know in a monthly basis reduce water consumption by 90 percent just in that area and that represents annual savings of \$150K dollars per year. So very significant, you know very simple solution that came about from you know doing one of these events. So these events are very important to our company in identifying you know low-cost opportunity, no-cost opportunities and, and sometimes also capital projects as well.

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Okay so at Owens Corning we also try to come up with creative and innovative solutions. So we do have a facility that is one of our largest users of water in Mexico that is testing a new water recycling technology. This site is located in an areas where the lack of water is starting to affect the population and industry. The process is based in an electrochemical principles to clean the water.

So just to give you a little bit of background. This consists of a device for treating liquid solutions. We use this hermetic cell, which a voltage supply to the anode and the cathode generating an electric fuel. During the flow of water through a set path of, of the process it becomes polarized and therefore the impurities are to be separated instantly. This is a continuous process without water for the separations. It does not use any chemicals which lead to energy savings and infrastructure costs and it doesn't require any replacing of the electrodes, because due to the material they are manufactured with they don't suffer any, any wear to that.

So this technology according to the vendor could reduce up to 47 percent of our water consumption at that facility and also decrease 95 percent of water treatment costs. So this could potentially you know be replacing our current wastewater treatment facility that we have at our plant.

Also, so you know there was a future expansion. You know this could prevent from, from the planning in having to build an additional well for this.

So we did it you know a trial back with them in, in 2018, in 2019, you know with promising results. Right now we actually installed a pilot plant and it just started running at the end of April. So the idea is that we were going to be monitoring this pilot process for at least two, two months, analyzing that treated water every week with a certified lab. And you know following up on a report for all the maintenance, you know all the filters that need to be changed, you know any adjustments that we would, we would you know we would need to look at when we you know, if, if we decided to implement this process long-term.

So basically this goes along with our long-term strategy to use these system and plus improvements as models for our future installations across our operations. So we leverage you know best practices from every facility so we can replicate it across the network, right? So very interesting project. It is a product that the organization is very excited about.

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And last but not least I want to talk a little bit about you know this opportunity we have from the DOE. You know we were selected to be part of the DOE pilot water INPLT training program. This was a two-and-a-half day activity that trained facility personnel on water efficiency.

The objectives of this training was first you know teach the participants on how to conduct a plant water balance. You know again like I mentioned before you know looking at that water intake, you know the water in, water out, looking at the losses and looking at each different piece of the process and how much you're consuming of water at, at each set. Also, helping us how to estimate you know the water consumption in, in, in those sites that we don't have metering, but we are adding metering to, to our plants in the future.

Then the second piece to that is you know quantifying true cost of water. So the event was held at a one of our plants in North America. In North America as we all know the cost for water is, is very cheap and then for this plant is specific you know we, we do have our own wells and that's where you know the main source of water comes from for this facility. So that mentality going through this you know into this event was that you know water for this facility you know is relatively cheap and you know that we think the cost of water is only incurred you know whenever we treat it or whenever we dispose of that water.

But you know talking to the DOE people that's, that's not really you know the true cost of water. So they were able to teach us you know additional to, to those costs you know there's other pieces that you know you can add to that cost of the water to get the – to be able to quantify the true cost of water. Those are you know cost of electricity and heating fuel. So the energy used for pumping water and the, the heater energy used for discharging in the wastewater as well.

So the third, the third part of the objective of this training was splitting up into two teams and based on the, the previous training on, on this water assessment the DOE had done with us and all the teaching they had, they had provided we went on, on how to plan and you know we were looking you know to find the water and associated cost saving and opportunities.

So just to name, to name some of the opportunities identified without doing into detail we're looking at you know something very simple as leak correction. So you know just fixing those leaks. We're also looking identified that you know at the bushing level you know some of those sprays that are you know cooling down the glass you know on the ends really don't come in contact with the glass, so they're not really necessary; so looking at removing those.

Also looking at you know removing one of those dehumidifiers we have in the two tunnels during the summer months and also looking at optimizing chiller control up, upgrades as well.

So key takeaway from here is that you know at Owens Corning we take advantage of you know trainings, webinars, either you know in person or virtual. We do encourage our employees to take advantage of these opportunities and it's a great way to bring in new ideas back into the facilities and, and implementing those as well.

So with that I conclude my presentation. Thank you.

Hannah Debelius: Great, thanks so much Jaime. We appreciate that and you certainly got a lot of interest in the rainwater, rainwater harvesting in our Q&A, so I look forward to getting to the end of this.

I'm going to move forward here and I am excited to introduce Joan Kowal, Kowal, excuse me, who is the senior director of resilience and utilities strategies at Emory University. A position within campus services, created to align the planning and design of all utilities more closely for the Emory Enterprise, while focusing on leading resiliency and sustainability objectives. Joan joined Emory in 2013 and received Emory's award of distinction for her contributions to meeting Emory's energy reduction goals in 2017.

So Joan I'm excited to hear from you.

Joan Kowal: Yeah, hi, thank you Hannah, appreciate the introduction and good morning everyone. For those of you who might have been at Better Buildings five years ago we presented on the water hub. We just celebrated our six-year anniversary, so this is a picture of the inside of the water hub. So it doesn't quite look like your typically water reclamation facility. So interested to give you all a little case study and lessons learned over the last six years, so we'll move forward.

Emory University for those that might not be aware is located right outside Atlanta, contiguous with the Center for Disease Control. So if you've been watching the nightly news where they report from CDC, often we're, we're just over the shoulder of the reporters. So we have 15,000 students, approximately 3,000 employees, 9 million square feet in 130 buildings. I'm pretty sure our research numbers have ticked up from the 628, especially with the COVID research, which Emory has been working closely with CDC.

The water hub was really the result of Emory looking at both global concerns and local concerns. We are located in a very limited watershed location. We're as you can see local concerns, largest municipality on a small watershed. We, we tend to fight over the water with, with Florida and continue to try to look for ways to decrease our use of potable water and I think I like Jaime's, Corning's goal of reduction in water withdrawal, because really that's what we're trying to achieve with the water hub is not have to pull additional water from the watershed and trying to maximize what we, we discharge and reuse it on campus.

So with Atlanta, as well as DeKalb County where we're located, sorry for the acronyms, CSO, it does not stand for chief security officer, Combined Sewer Overflow, which most of you probably know, but we've had a lot of issues within Atlanta and DeKalb. There's a very large infrastructure replacement projects going on, middle of the roads closed.

Emory recognized that we needed to do our own internal investment on our infrastructure and not just rely on both the city and the county. So that was the impetus of looking at the water head hub and moving forward.

And in general using FY19 given that FY20 data was a little skewed without having most students on campus, we were using a little over 360 million gallons per year and fortunately have been able to use close to 40 percent of our HVAC cooling water makeup from the reclaimed water. We have not used irrigation yet. So right now we are not permitted for irrigation, but you know hopefully in the future we can use it for irrigation. Looking for other opportunities outside of, of just utility water.

So again, similar to Corning we've, we've looked at storm water recapture, we've looked at grey water reuse, we've looked at low-flow fixtures. I will say that our grey water reuse would love to hear from those who have been successful with it. We've, we've struggled with our grey water reuse systems and so now we actually just have that water flow back into the sanitary sewer and get processed into the water hub because our grey water reuse systems were very maintenance intensive.

And then with regards to our rainwater capture you know while, while a great feature it didn't provide the consistent water makeup we needed, so again, the water hub is able to pull from our sanitary sewer system and provides that continuous water makeup.

Here just shows the tracking of where I think everyone starts once they, they have their water reduction goals. You know they, they try to have occupant participation, everyone did their energy efficiency and water efficiency low-flow fixtures early on. The water capture and then again hopefully moving onto a reuse system.

Next slide.

So just a little background on water hub. It's designed to process up to 400,000 gallons per day, which would be about 40 percent of our total water used. We intended to use it at both the steam plant for condensate makeup, as well as cooling tower makeup and toilet flushing. I will shed light on our steam plant condensate makeup. One of the lessons learned from that is that the conductivity of the water was too high to be used at the steam plant, so right now we are looking at adding reverse osmosis to, to help control the conductivity so we can use it at the steam plant. So that's something that for those of who are thinking about a reclaimed water facility I would offer that looking at the water chemistry requirements and really defining that in the design of your facility is critical.

We did look at it. I think we just none of us realized that the actual sanitary sewer coming into the facility had conductivity spikes and we needed to, to have a way to process that.

The technology, the biomimetic technology is using what we would call "root technology," it's, it's not all just natural root systems, there's synthetic root systems with it as well. But the process allows for a very low chemical, I mean other than chlorine it's a very low chemical use treatment facility and which again, I'll, I'll speak to our, our discharge permit, because that became an issue. But I think with regards to sustainability it stands out against other types of reuse facilities.

And the water savings we're using a power or a water purchase agreement format. There were a considerable savings that were projected based on receiving a sewer credit from our local watershed, which was the watershed would not process the sewer and I'm going to speak a little bit more that. That has actually been problematic, because after several changes in administration at the watershed management they are no longer recognizing the sewer credit. And I think the recognize it technically, they just haven't

figured out how to recognize in the regulations and pass those savings back to Emory and the water hub.

Next slide.

So here's circling back on the design considerations. You know we were fortunate to have a location very close to a main sewer line in our facilities management compounds. We were very worried about odor and so having it located in the middle of campus was a concern, so we did locate near our facilities, but odor has not been a problem I'll state that right up front. But you know it is advantageous if you can find a location near one of your main sanitary sewer discharges to help reduce pumping costs and as well as pipe distribution.

The sizing of it similar for those who have sized other type of what I would call electrical systems. You, you have peaks and valleys to your usage and so we have tried to size it a little closer to base load and recognizing that we're maxed out during the summer demands and we have some excess capacity during shoulder months or when we don't have high occupancy. So again making sure we can use it at the steam plant that will help with our winter usage.

And the water quality again the, the cooling towers who worked with our water treatment center and they did a great job of adjusting what additions they had to make locally so we could get our cycles of concentration back up very quickly. So that was very helpful.

The other benefits that might not be as obvious to everyone you know are the sustainability, the educational, and the aesthetics. So you know we conduct a large number of tours every year through the facility. It is also hopefully a pilot that can be replicated by others. One of the reasons we have it you know showcased is so that other, whether it's other manufacturing facilities or other high eds or even small municipals can try to replicate it. And our students come and take water samples from it. It's a living learning laboratory for them and so you know it really has both the sustainability considerations, as well as the economic value.

Next slide.

So here's one of the things that I think as folks might want to consider for their location is whether you do have guidelines for reclaimed water systems and what's your state EPD guidelines are.

We were fortunate in Georgia to, to have that supported by Georgia EPD Guidelines, but then having our local watershed management company or jurisdiction actually implement the guidelines is where we've, we've run into some issues. So the guidelines are issued, but your local authority is the one who develops basically the regulations that you need to follow.

So when we first started the water hub we were not required to have an industrial discharge permit and it was right before we came online that the county decided we should hold discharge permit. It wasn't problematic at the time because the discharge permit was going to be self-reporting and everyone recognized that we weren't adding anything to the water, so that what we were discharging would have already been what was in the water if it had just flowed straight through to DeKalb and hadn't been extracted by the water hub.

Unfortunately, what's, what's come back around is an interpretation that the county is only looking at our discharge and they're seeing that there's constituents such as phosphorous, phosphorous existing in the discharge and they're not taking into consideration that those constituents were in there in the influent. So they've now put us under an industrial discharge permit with limits that really can't be met unless we look at it as a mass balance. So really what we're saying is, "We're not putting anything back into the water we're discharging, it's just more concentrated." So we do blend it with some clean water overflow, so we're still working that out with, with the county.

Then the big financial I alluded to earlier was that in Atlanta I know Jaime said you know so water's cheap, well water for us the water rate is about \$15.00 a kg/gal and of that close to \$11.00 is for the sewer component. So we had expected to receive a credit of some, if not all, of that sewer component, because it's water that's not being treated by anyone downstream, because it was actually removed from the system and reused. And unfortunately, when the facility was being designed and put into operation the DeKalb Water Management was supportive of that and we have documentation that they were supportive. But what's come into question now was who had the authority and did it have to go to the council for approval and should there have been a tariff created just for this type of credit.

So really right now the credit is going unrecognized and you know as I mentioned we just celebrated our sixth anniversary. So if I can emphasize anything for anyone considering a facility it's really

getting those type of commitments formalized upfront, because now that the facility is built and operating the leverage just comes down to would we have to shut it down in order to, to push a decision, which none of us want to do. I mean it's providing a benefit to Emory and the county and the downstream City of Atlanta, who actually has a water treatment facility that receives our sanitary sewer.

So not to scare anyone off, just want, want everyone to, to know you know kind of lessons learned at Emory.

So next slide please.

Again, I referenced earlier similar to a power purchase agreement and so water purchase agreement. We lease the property. A third party designed, owns, and operates the facilities. It did no cost Emory any upfront capital. We, we pay for the water we receive. If it's not available, we don't have to pay for it. So again, it's, it's an ideal situation, it's really as though we're purchasing the water from a third-party utility.

Next slide.

Just to, to recap you know it's the risks associated with a third-party agreement you're going to be working with that entity for the next 20 years, if that's the term. I think it really – you know you need to, to go into it as a partnership upfront. Most likely they'll be on your facility grounds or, or nearby and so having that working relationship.

You know we unfortunately I don't know how everyone's utility locates though, but we've definitely hit their lines a number of times and it's – you know that phone call we have to make that said, "Sorry, can you turn your system off and isolate while we repair your line for you?"

We also the price structure can be negotiated to, to help fit whatever you're budgeting models are. So whether it's fixed price or an index to the local utility rates, but again focusing on the value of that sewer credit I think is instrumental for, for both parties and getting that formal commitment from the authority that would have been treating your, your discharge.

And again, oh, so just highlighting – no that's okay you can move on.

Cycles of concentration at the cooling towers were backup at 8. We did not have any additional chemical costs that would have made the project prohibitive or unseen costs. We are looking at the reverse osmosis for the steam plant. We did find that there's some things going down our sanitary sewer that we didn't know were happening, so animal bedding was one of them. It ended up looking like concrete in the intake pumps and so we, we backtracked and found out that our Department of Animal Resources was just flushing their animal bedding down, down the sink, so we were able to send that to compost now.

And red highlight please have your sewer credit in place prior to construction.

So thank you and look forward to your questions.

Oh sorry last slide, highlighting that is a living learning laboratory for those at the university and you know we, we really see that extra value and it's not always taken into consideration in your economic model.

So thank you.

Hannah Debelius: Excellent. Thank you so much Joan. I particularly appreciate this update and so it was five years ago that you joined us in the Better Buildings before, so that was really great to see.

Our final panelist today is Ken Rosenfeld. He's the director of state and local affairs at the Building Owners and Managers Association International. Since joining BOMA in 2017 Ken has provided strategic and technical assistance to the nationwide network of BOMA, local associations, and state coalitions in support of their advocacy efforts. He also manages BOMA's industry defense fund and oversees industries sustainability initiatives.

Ken, looking forward to hearing more about the W-squared Challenge.

Ken Rosenfeld: Oh well thank you and good morning to everybody. Thank you for joining this session and thank you to Hannah first and everyone at the Better Buildings Program. We at BOMA always enjoy working with Better Buildings, not only because of the important work they do, but they're, they're great to work with, so thank you to, to everyone at Better Buildings.

My presentation will be a little different from the previous speakers. They did a great job sharing some best practices. Our story today is a little simpler, but we think just as important when it comes to saving water.

For those who might not know BOMA again as Hannah said we are the Building Owners Managers Association, so we're representing the commercial real estate sector. The story we will want to share today is the W-squared challenge, a program that we ran that had remarkable success. W-squared standing for water and waste. A lot of people guess that, but thought I better mention it.

So let me start off with why we created this challenge. It was based on two very simple ideas on your screen. First our belief that water and waste for the next frontier of sustainability efforts in the real estate sector from experience we know that energy use, energy efficiency are well understood. There's a long track record of leadership in the real estate industry, it's ingrained in our organization at BOMA. That's not to say there's not plenty more to be done regarding energy, but it felt like it was time to see what could be done on water conservation, waste output.

Secondly, you, you can't manage what you don't measure. This is a message that probably sounds like an old cliché at this point, but we think that's because it's true. So we turned to look at benchmarking. There are studies that show that the mere act of measuring often results in performance improvements. We've absolutely seen that in energy use.

So the question is: What if we could create a voluntary program to encourage benchmarking of water and waste? Where all the evidence seems to be that few properties were benchmarking, they were just paying the bills. Kudos to Better Buildings on that Slido poll at the start, which showed attendees saying the biggest hurdle to water conservation is, is data tracking, so that's what we thought too.

Next slide please.

So we formed what we think was a very effective partnership to make this program a success. So BOMA managed the program. It was an idea that originated out of our energy and environment committee. It was supported by YARDI, which is a BOMA cornerstone partner, an organization that really shares our views on sustainability through market transformation. We partnered closely with Energy Star. We have a very longstanding relationship with

Energy Star and in this case they were again a great resources, as well as hoping to promote the challenge. Energy Star saw the tremendous opportunity in having the industry run a voluntary challenge, particularly on water and waste where we could push new users to use Energy Star tools.

So what is the W-squared Challenge? We set it up as a two-year program, it's now complete. Participating properties committed to benchmarking water and/or waste. We understood that waste was a bit of a different animal with different hurdles, so we just encouraged as many properties as possible to do what they could, but of course, we're, we're focusing today mostly on the water side.

We needed two years to give enough time to get everyone used to reporting and then start to implement changes. Participants had to benchmark in Portfolio Manager and this was a key point, because we found almost no one knew that Energy Star supported water and waste benchmarking, in addition to energy. It's free, it's available, it works well and it was just a matter of spreading the word.

Participants received progress reports and technical assistance. Very important to us participation was open to anyone and everyone. So you did not have to be a member of BOMA. You did not have to be a commercial property. We just wanted to reach as large an audience as possible.

So hopefully this is already clear how this type of challenge could benefit the industry. We could advance the next generation of industry sustainability efforts, we could widely publicize Portfolio Manager as a tool for tracking water and waste, in addition to energy. We could demonstrate the power of voluntary benchmarking, which the industry is very interested in. We could also indentify challenges. Start to identify some policy solutions.

So then it brings us to the question: Why should any property individually participate? This was a big question at the outset. We were asking folks to choose voluntarily to do more work. We felt that we had a substantial list of benefits to offer. You could better understand your water and waste usage, receive progress reports, compare your performance to your peers. Ideally you would achieve, you would see quickly reductions in operating costs. You would receive guidance, best practices. And of course one of the benefits of any challenge-type program is to receive recognition for your work as well, so we created a participant logo and encourage its use.

All that said we had no idea who would sign up. Our friends at Energy Star with all of their experience said, "That if you get 100 properties to sign up it would be a big success."

So there is not better set of metrics than this slide when it comes to our W-squared challenge. Our top goal was to get participation and this widely exceeded all expectations. We had nearly 2,000 properties participate. They were in more than 400 cities spread out across the country in markets of all size. That half of the properties were office, but there was great participation from really all other sectors, residential, industrial, we had data centers, we had some government buildings. It was really impressive to see everybody signing up.

But it's the last number, the circle to your right, that we think is the most telling, nearly half a billion square feet of property were shared with the challenge in Portfolio Manager. So properties weren't just signing up, they were participating. They were doing the benchmarking, they were sharing the data with us. So it wasn't a matter of just making the commitment, it was actually following through.

So let me touch briefly on the resources that were provided to the participants. They received monthly e-mails, there was webinar series to share best practices. On the screen right now is an example of the resource that we think will live on long past the challenge. We created a set of two "Improvement guides" we called them, one focused on water and one on waste, each containing a checklist of basic steps that can be taken to improve performance. So we look forward to continuing to circulate those around.

On the next slide you can see just one example of the residence, maybe the reach of this program. If you look very carefully on your screen or if your resolution is good enough you'll notice that this is one of the improvement guides translated into Mandarin. And our affiliate in China read about the program and asked if they can translate these improvement guides and circulate them. Of course we were, we were happy to give them the go-ahead to do that. We will never know the full extent of how the challenge reached properties across American and around the world, but we were certainly thrilled to see it have this kind of reach.

And perhaps most important for the participants was the quarterly progress reports that we provided. They could see data for their

individual properties, they could track progress, they could see how they're use intensity compared to averages across all participants. There was nothing overly complex here I'll admit, but these reports allowed properties to see what was going well, what wasn't going well, and start conversations at home on where changes could be made.

We know of one property for instance that identified and repaired a water leak in the building, a serious link and they learned about because they saw a number that surprised them on their challenge report. So it just shows the power of this kind of data.

We were sometimes asked to provide aggregate numbers, right? So how much are we savings across the challenge? Honestly, we were less interested in that at least in the short term and we were focused on getting participation and changing behavior that will lead to longer-term results, but I'll share this quickly. Just as one example comparing one 2018 quarter to the same quarter in 2019 we saw savings of more than 1.6 million gallons of water, over 200 tons of waste. Those numbers sound large, you can actually argue either way whether they're significant on their own, but again our real focus was on getting those participation numbers up and finding the anecdotal evidence that, that supported changes in behavior.

Let me share one good example. For instance, LBA Reality was an active challenge participant, they already were known for having an existing commitment to sustainability. But they found inspiration in this challenge. One of their large properties in Phoenix pictured here underwent an audit process at the beginning of the challenge. It wasn't just for W-squared, it was also for their BOMA 360 designation, it was also for the LEED Silver certifications. I know a lot of you are dealing with juggling a lot of programs.

But in this case engineers in the audit realized that aerators were not consistent throughout the building's restrooms and tenant's kitchens and recognizing this as a pretty easy fix. The property team upgraded 132 bathroom faucet aerators and 30 kitchen sink aerators, it's a 26-floor building. This improvement lead to a 37 percent reduction in building water use. So what we thought was an astounding number. A really good example of a low-cost solution that, that had significant impact.

And even though our emphasis on participation, this was a challenge. We did identify winners or champions of the contest, so I certainly want to give them a shout-out here. We recognized them

as best we could during, during the pandemic. We were hoping to have everybody in person to celebrate during our 2020 Conference, but the pandemic got in the way of that. But we also mailed awards to the champions for them to show off.

In the large portfolio category, Shorenstein won with a really remarkable reduction, 56 percent reduction in water use over the length of the challenge, joined by UBS and Principle Real Estate Investors. Then we also had a small portfolio category, the champion was Americas Capital Partners, joined by Unico and AGLO Burbank and Kilroy also had waste champions as well.

But I want to finish up with a couple of stories that really reflect what we think is, is a shift in the industry and, and the new or least growing attention to water and waste. So let me quickly mention two stories that we collected along the way.

One, Ballantyne Corporate Park there with Northwood Office in Charlotte. This is a really large 500-plus acre corporate park, 40 Class A office buildings and Ballantyne had a reputation for being a very responsible development. But Northwood decided to leverage the W-squared Challenge. They saw it as an opportunity to expand beyond their energy successes and demonstrate some leadership in water and waste. Their facility's team switched to a new waste hauler that had individual scales on their trucks that could give them exactly the information they wanted. The team started holding recycling seminars with tenants.

Now that they were using Portfolio Manager they could see differences among similar buildings when it came to water and waste usage and try to, to pinpoint problems. They also started communicating information back out to tenants, which we thought was really significant. They added a screen in the lobby of each building displaying the building's energy, water, and waste footprints. Going forward they hope to, to rollout a lot of these ideas to their whole, whole portfolio.

On the right is The Residences at La Cantera, which is with USAA Real Estate in San Antonio. This is an attractive high-density, multifamily building, part of the mixed-use master plan development.

San Antonio of course a location that often experience drought conditions and restrictions on irrigation and water features. So they again tried to leverage this challenge to figure out, "Well how can we create an attractive property that also places an emphasis on

resilient design and green construction and focus on water conservation?"

They decided to install Energy Star appliances, including dishwashers, high-performance faucets and showerheads, relocated water heaters so they were close to fixtures. Then they implemented a, a comprehensive storm water system that directed runoff and installed a system that collects water from the air conditioning condensate. Water that would typically be runoff is now treated, stored in a giant cistern and used for irrigation and water features. So combined with a landscaping plan that was appropriate for the area they now find they can meet all of their irrigation needs from their collection system.

So those are just a couple of stories. Let me finish with one last indicator that maybe provided a little external validation of our efforts. As part of its 100th anniversary celebration ASAE, an association I'm sure many of you are familiar with, they produced a report highlighting 100 associations that "Will save the world," they said. We're very proud to say BOMA was included in that list and featured as a leading example in the category of sustainability. The program that they highlighted was the W-squared Challenge.

So for whatever reason properties chose to participate with us, whether it was just focused on cost savings, whether it was on achieving sustainability goals, whatever it was, we do feel like this is making a big difference. We're happy to hear that this was helping to save the world and, and certainly delivers on the message that, that I can close with which is that voluntary benchmarking works. It's amazing what can be accomplished just by a, a finding the data and looking at the data.

So with that I will stop there. Thank you again to the Better Buildings. We're always excited to share the story of the W-squared Challenge. Happy to answer any questions and, and please anyone on this session please reach out at any time. We're always looking to partner on our sustainability and our resilience work. So thank you.

Hannah Debelius:

Wonderful and thanks so much Ken and a lot of the wonderful organizations you mentions are Better Buildings partners and be in align with us, so I appreciate all those examples and shout-outs.

With that I'd like to invite our other speakers to join us again on video, because we are going to be moving to about 10 minutes of Q&A. It is not too late to submit your question on Slido or you can

go ahead and hit that Thumbs-Up to vote for another question to move it to the top and we'll probably just get to a couple here.

So if we could bring up the Slido onto our screens. I'll start with our most popular question here, which I think originally came up during Jaime's presentation, but I really is relevant to a lot of our speakers, which is: How do you balance prioritizing water amongst other sustainability or carbon related goals?

So Jaime do you want to kickoff with that, since I, I remember your slide with all of the goals that you have going on.

J. Gonzalez-Brana: Yeah, I can go ahead and, and talk about that Hannah. So I wouldn't say we you know prioritized over you know any other, you know any water goals against other sustainability goals for carbon related goals we have. I would say all of them are equally important. I mean we, we do have very aggressive you know set of goals towards our 2030 set of goals. So each of those goals are very important to reach, to meet our objectives, right?

I would say, however, as we saw on that slide we you know we, we did meet four out of six objectives and one of the biggest challenges was waste to landfill, right? So what I can say is that there some big focus right now in you know tackling that challenge and, and seeing what we can do to reduce our waste to landfill footprint.

Then talking a little bit about you know energy and water, um, you know that they don't compete, right, they're, they're a synergy. As I talked about you know the true cost of water that doesn't just include the cost of water and, and disposing of it, right? There's other costs unrelated to energy in there as well that we should account for in there.

Hannah Debelius: Great, thanks so much Jaime.

J. Gonzalez-Brana: Yep.

Hannah Debelius: Joan, would you like to also weigh on that since I see that the next question is similar, but directed to Ken.

Joan Kowal: Yeah, so let me, so what I think has helped at least at Emory and you mentioned with my new title I, I cover resilience, so our office is combined for resilience and sustainability. We've actually had more water outages in the last two years than electric outages and so it's amazing how when you factor in resilience and reliability

that it helps prioritize water. And so the things we can do to reduce our independence on, on water or our reliability on water has helped elevate it in priority, at least over the last few years.

I think you know luckily we had forward-looking senior management and goals fixed you know really was probably 8 years ago with the water hub and that had a lot to do with drought and the cost of water. But now with resilience I think it's helped prioritize water and on-campus water storage is probably something that we'll be trying to expand just because of the potable water outages.

Hannah Debelius: Yeah that makes sense, interesting perspective to be coming from [crosstalk].

Ken Rosenfeld: Hannah –

Hannah Debelius: Yeah, please Ken.

Ken Rosenfeld: If I could just add one perspective too, because it's such a good question and especially now, right? We're at a very unusual time due to the pandemic and we're starting to see buildings reoccupied, most never closed as I'm sure everybody on, on this session knows, but they're starting to be reoccupied and there's really interesting questions about, "Well how much energy are we going to use now?" "How much water are we going to use now?" "Is this just open season because we're so happy to be back in our building?" "What about improving indoor air quality and is that going to increase energy use?" Really interesting issues to keep an eye on. So I just wanted to add that we're, we're taking a look at that from our perspective. We're talking to our friends at Energy Star for instance. I think you'll hear a lot more about how, how the reopening is going to work.

Hannah Debelius: Yeah, absolutely, that's a great point about the pandemic, Ken.

Well Ken I'll keep you in the, in the hot seat here then, since the next question is directed to you which is: Did you see any benefits in tackling water and waste together?

Ken Rosenfeld: Well I'd, I'd say anecdotally we did in that buildings that decided to participate even if they weren't use... In fact as I said earlier in my talk a lot of people are used to water, at least tracking their water bills. Waste seems to be kind of a black hole for data, right? I haven't found many people who disagree on that, they just don't know what's going on, other than they pay the bill.

So we knew it was a little bit different and had to be handled a little differently. Some folks were a little hesitant to even try tracking their, their waste, but we found just by participating, just by getting people started looking at these new tools in Portfolio Manager, even if they started with just water, maybe they added some waste tracking too. Or if they started a water conservation program in their building maybe they started looking at a, at a recycling program where they didn't have one before.

So we saw it leverage up. We don't have numbers to back that up, but I can't tell you how many stories I heard. So you know it's just an example of the more you do this, the more, the more you want to do.

Hannah Debelius: Yeah and that's the issue and challenge around data for waste, certainly what we found in our Better Buildings Waste Pilot as well, which I know we've spoken about Ken.

I think that these, these next two questions because they're code related I'm going to kind of combine here. So the question is: the biggest hurdle to water use reduction seems to be the existing code barriers to using recycling. Recirculating grey water for use, how can we overcome that? And then I'm going to kind of combine that with just the question about codes in general and that's open for any of our panelists if you'd like to, to jump in and address this.

J. Gonzalez-Brana: Yeah, so I can address the second question on why does rainwater harvesting mandated by codes? I wouldn't say that is the situation. So most of the projects that I showed were international. I think you know it really depends on, on the local authorities on you know what the codes for you know harvesting you know rainwater system. But I, I wouldn't say you know there's no code for that you know on rainwater harvesting. You know I would say it's more you would have to check with your local authorities for the permitting and the codes for that would be.

Joan Kowal: Yeah I would, yeah –

Hannah Debelius: Yeah Joan I saw, I saw you nodding so go ahead [*crosstalk*].

Joan Kowal: Yeah, yeah, well so I, I just think you have to start early in the process. I do think a lot of the states have started adopting guidelines. It's maybe having some joint conversations. So you know Georgia EPD was very helpful in that they got on a joint call

with us and our local water management or were able to help talk through what some interpretations of the guidelines are.

But I also think the more you can bring in your peers, so if there's other entities within your jurisdiction that are looking for those types of code adoptions to allow the use of whether it's grey water or totally reclaimed water, you know it, you know you, you get more results with, with more voices. So I would just suggest trying to reach out to your, your other peers, even if they're competitors. I mean I don't think this is an area for competition per se and so if you can get more people onboard reaching out and helping facilitate it. I just, I think most of the, the local utility folks are overworked and have a lot other priorities on their plate and so you almost have to, to issue drafts for them for review.

What we did was we actually shared with them other parts of the country that have very good you know guidance and code regulations. So I think it's, it's an education process first to start.

Hannah Debelius: Mm-hmm. Ken, anything to add before I go to the next question on that?

Ken Rosenfeld: Yeah, just to echo that as someone who works in government relations I'll, I'll put in a pep talk for advocacy, right? You would, you would be surprised how easy it is now and rewarding it is if this is an issue that you think can make a difference to find partners who agree with you. Take your story to local elected officials or sustainability staff. But you know figure out what the hurdles are and just point out what the opportunity is.

I would not assume that everywhere that this is not allowed that it, it's been thought through and that there's a reason for it. So sometimes just doing a little homework and presenting your case can make a big difference. We, we work on codes all the time. They're always changing. It can sound confusing from a distance, but, but you really can make a difference if you just start having these conversations.

Hannah Debelius: Great, thanks Ken. So I think I'll pop down to the question for Joan then, which is: Joan, has Emory considered paring with another local university or nearby town to tackle water management for the area so the infrastructure is better solved. So what's the status of that?

Joan Kowal: I think it's an interesting question. We're actually located in DeKalb County and receive our water from DeKalb County, but

we annexed to the City of Atlanta two years ago. So our leverage within the county is pretty low right now, because our – you know we, we pay into the city of Atlanta.

I would be interested to see if anyone's had success with... I mean sure they'll take a check. We could, we could write them a check to help them with their water management issues, but I, they're, they're pretty protective of their water models. They have worked with us and you know we've repaired their lines that come through the campus all the time. I mean they're happy to have us.

But there doesn't seem to be because they're not a regulated, they're not, they don't have oversight by the Public Service Commission, they don't have that requirement to do that integrated resource plan that looks outward 5-, 10-, 15-years which I really think would be beneficial. They're just reacting to wherever the, the crisis is of the day or the week. And so I think it's just it's a hard thing to tackle when you don't have the force to planning that they other utilities do. So great question.

Hannah Debelius: Yeah, that makes sense. So I think if we could briefly do just our last question is what we have time for here before some conclusion slides and resources, which is that: How does harvesting the rainwater effect the amount of water going into local water supply? So I'm sure Joan or Jaime if either of you have looked into that for your organizations or if not we can also pass.

Joan Kowal: So I'll just offer that you know rainwater would normally go into storm, which that goes back to that you know combined sewer overflow, whether the storm is eventually catching up to the sanitary sewer. So it doesn't really positively impact water supply. They don't unless the downstream water municipality has some other type of reuse that they're using for it. But I think that's why it's so important to have the distributed local rainwater capture so that you can use it, because I don't think in most cases the, the water utilities are, are using rainwater for that.

Hannah Debelius: Mm-hmm, mm-hmm. All right, thanks Joan. Anything to, to add from other panelists before we move on here? All right excellent. Well there were so many questions we didn't get too, but I will say that our contact information for all our panelists is at the end of the, the slides here, so you can still reach out and contact our panelists.

So if we could pop back over to the slides. I just want to mention that we do have some additional resources, solutions that we talked

about today, you know including more information in fact on, on Emory University and Owens Corning that you can checkout when you get these slides and the recording.

In fact while you're on the Solutions Center let's see here, the Better Buildings Solution Center has over 3,000 solutions to help you find proven and cost effective strategies to help you reach your energy, water, and waste reduction goals. So we can watch a quick video to learn more about the solutions center.

[Music]

Great thanks so much. And I will say that if you've been enjoying yourself at Summit so far. I hope you'll also checkout our Better Building Summer Series, which is a webinar series that will be going through the rest of summer. We've got some great things planned, including since we talked a little bit about waste on this, I'll plug that we have a waste session happening at the beginning of August. But you can go to Solutions Center on events and program and events and that's where you can find registration for this.

And finally, I would just like to thank all of our panelists for your insights and your perspectives and your time today. It was wonderful to go so in-depth about the water programs and the incredible accomplishments that you all have done personally for your organization or been able to pool together for the larger industry in your case Ken.

We hope to hear from attendees and thank you so much for joining this session on How Progress Flows.

J. Gonzalez-Brana: Thank you.

Joan Kowal: Thank you

Hannah Debelius: Oh and also there's a feedback survey *[chuckles]* that is starting in Slido right now for all of our attendees.

Ken Rosenfeld: Thank you.

Hannah Debelius: Those are anonymous so other people won't see your responses and that will be open until tomorrow. So if you could give us feedback we'd really appreciate it. Thanks

[End of Audio]