Cedar Blazek: Hello everyone. I'd like to welcome you to our fourth and final day of the 2020 Better Buildings Better Plants Summit, a Virtual Leadership Symposium. Thank you all so much for being here today. This session is titled "The Secrets of Better Buildings Goal Achievers." We have a wonderful session prepared and some fantastic speakers lined up. Before we dive in there are a few points I would like to cover. Today's session will be recorded and archived on the Better Buildings Solutions Center. We'll follow-up when today's recording and slides are made available. Attendees will be in listen only mode, meaning your microphone is muted. If you experience any audio or visual issues any time throughout today's session please send a message in our chat box in the chat window located at the bottom of your Zoom panel.

My name is Cedar Blazek and I'll be your moderator for the day. I work at the US Department of Energy in the Building Technologies Office. I've had the pleasure of engaging with commercial partners through the Better Buildings Challenge and the Better Buildings Alliance since 2018. We're going to kick off this session with some introductions and housekeeping items. I'll give a brief presentation on behalf of DOE and then hand things off to our esteemed guest speakers. We'll wrap up at the end of the session with plenty of time for your questions. As with all previous sessions during this virtual summit our Q&A and polling will be held on an interactive platform called Slido. At this time please go to Slido.com using your mobile device or by opening a new window in your internet browser. You can input today's code, #BBSummit, and selection our session from the dropdown menu, The Secrets of Better Buildings Goal Achievers.

If you'd like to ask our panelists any questions please submit them anytime throughout the presentation. We'll be answering your questions near the end of the session and if you have a question directed at a specific speaker you can put their name first and that way we know who to ask. If someone else has already asked a question you can upvote it too using the thumbs up graphic. We hope you'll join this session and our conversation on social media by utilizing the hashtag #BBSummit2020 on Twitter, LinkedIn, or any media platform you may use.

So we're going to launch a poll and invite you all to participate. If you haven't already go to Slido.com under #BBSummit and select The Secrets of Better Buildings Goal Achievers from the dropdown. And here is our first poll. We'd really like to know where you are calling in from today. Because we have a virtual summit we can get folks from all over the US and potentially even

beyond. Feel free to keep inputting your location and we'll come back and look at the word cloud in just a moment.

Now to begin our session I'd like to give you a quick look at The Better Buildings Challenge. Initially launched in 2011 The Better Buildings Challenge set out to reduce energy use in US buildings and manufacturing plants by 20 percent over 10 years. Our program seeks out leaders in the industry to make large, public commitments to energy efficiency and to share their proven approaches and results with others. That is why I'm so excited about this session today. We'll be hearing from 3 very different organizations who not only set ambitious energy goals but managed to achieve them within their 10-year timeframe. My hope is that those of you on this call can learn from their plans and apply some of the winning strategies at your own organizations.

The speakers you'll hear from today are members of an elite group of just over 100 Better Buildings goal achievers. I wanted to take a moment to highlight the other organizations who have made significant strides in improving the energy efficiency of their buildings and met their Better Buildings Challenge commitment. Congratulations to these great leaders. So just a quick reminder if you have any technical issues please message our tech support team by using the chat function in your Zoom panel. All other questions can go on Slido.

I'd like to thank our 3 panelists who will be speaking today. We'll hear from Shelby Busó of the City of Atlanta, Jim Henry from Iron Mountain Data Centers, and Megan Saunders from Lendlease. I'll tell you a bit more about each speaker before their individual presentations. Thanks to you all for being with us today. Now I want to go back and take a quick look at the results of our word cloud poll. It looks like we have a lot from Washington D.C. and Boston, Colorado, that's where I'm at today outside of Denver, we have a lot of Virginia, but a lot of states represented, it seems like all time zones, so thanks to all of you for coming in. We can go to the next slide.

All right, so we're going to get our session started today by hearing from Shelby Busó. Shelby is the Chief Sustainability Officer for the City of Atlanta. In this role she leads the sustainability team within the Mayor's Office of One Atlanta. Prior to working for the city Shelby was the Director of Community Enhancement and Market Transformation with the US Green Building Council managing statewide initiatives, working regionally on key account management, advocacy, technical support, marketing, and market

development. In Atlanta she has worked for Central Atlanta Progress as the Director of Sustainability and Midtown Alliance as well as the Clean Air Campaign. Shelby holds a master's of environmental law and policy along with a Juris Doctorate from Vermont Law School. Shelby please take it away.

Shelby Busó: Hey guys. I think I got back online just in time. I lost you for a minute there and had to turn off my video so forgive the blank screen there but you can see a picture of me on the next slide. I'm Shelby Busó, the Chief Sustainability Officer for the City of Atlanta. Thank you so much Cedar for the introduction. Our office is the Office of Resilience and we're actually nested within the office of One Atlanta, which is in the mayor's office in the city. On the next slide you can see some of our priority objectives are really to create an affordable, resilient, and equitable Atlanta, which is One Atlanta, and the Better Buildings Challenge is no exception to that rule. We've been really excited and impressed with the engagement here in Atlanta. Next slide.

This is our official logo for the Atlanta Better Buildings Challenge. We are a city participant who joined the challenge as 1 of the first 3 cities in 2011. We do have a year-end report from 2019 that we can share with some of the resources at the end of this that acknowledges our success early so while the commitment was initially 20 percent by 2020 we did achieve our goal by 2020 – 1 year early in 2019 and that was for savings in energy and water.

On the next slide you can see that we really relied primarily on partnership for this program. It launched downtown initially and we were really hopeful that maybe we would get 2 million square feet to join in in 2011 and the program really grew quickly to our other partner organizations in Midtown and Buckhead Atlanta and eventually even became a city-wide initiative. So we were happy to celebrate that success, next slide, was really in thanks primarily to these partners you see listed here, the Atlanta Downtown Improvement District, Midtown Alliance, and Livable Buckhead helped us with recruitment and engagement and Southface was pulled in early as our technical partner.

On the next slide I know we're here today to talk really about successes and while we found ourselves in the situation of celebrating success early. Partnership was a big part of that. We also were able to recognize our participants really effectively and that helped by having some senior leadership buy-in early in the program. You can see this program actually stretched through 2 different administrations in the city of Atlanta so not only did we

have our previous mayor celebrating success there and acknowledging some of our partners. The top right picture there is Emory University and left is another one of our top performer celebration events and below that is when Georgia Tech also received an outstanding award. We used Energy Star Portfolio Manager for our data sharing and we partnered closely with Georgia Power and others to make sure that we were gathering data efficiently and we were able to put that out to the rest of the group in a public recognition platform and rely on the data in that way.

We also provided monthly educational and training opportunities for our participants, which not only was an opportunity for them to get to know each other but for them to push themselves further in the competition. I think that competition in and of itself was a driver but the recognition in a pretty cool way also helped us to elevate the program. We were pretty deliberate about having the top performers acknowledged in local media and also we gave them very beautiful awards and celebrated at some amazing venues in the city of Atlanta.

On the next slide I wanted to acknowledge again our data management. So like I mentioned Southface was our technical assistance partner. They helped us with a lot of data tracking and performance measurement. We used Energy Start Portfolio Manager to track and benchmark buildings and their use and created a public-facing dashboard that displayed the aggregate program data. On the right you can see a snapshot from the page AtlantaBBC.com, which has not only some of our recognition and celebration and events pictures but our data displayed as well so that everybody could see the program participation broken down by property type, which we'll look at on the next slide, but also our program presentation and data presented as a whole in aggregate.

As you can see the largest constituency of participation was in the commercial office space. There were some city buildings in there and our rec centers and fire departments as well, but you see another big chunk of the participation was from our school districts that joined into the program as well, which was a really great partnership and engagement strategy for getting all of these facility managers together to talk about how we benchmark, what's possible in Atlanta, and that ultimately led to some good policy in the city as well.

On the next slide you'll see that our benchmarking process and policy evolved out of the Atlanta Better Buildings Challenge

participation, which was of course voluntary, but we started gathering data early and were able to break down median site EUI by property type here, which was a helpful way to start seeing where we could double-down on our education and investments to make the most impact possible. On the next page you can see the data visualized in a little bit of a different way as well.

We'll move onto the next slide to talk about program impact. So you can see here over time how the energy performance and total energy savings has been measured. Although we started the program in 2011 we actually benchmarked buildings data all the way back to 2009 and you can see how we progressively, despite growing in participation, still were able to achieve our cumulative energy savings and this measurement is trillion BTUs by early. And if you go to the next slide there's some call-outs on this data. So in 2017 alone over 4.63 trillion BTUs were saved, which is equivalent to about 240 wind turbines running for a year and the total energy savings is equivalent to 206,000 homes energy use for 1 year.

On the next slide *[loss of audio]* to our waterways as well. We were saving energy to save water in addition to the water consumption as a whole. Next slide, these numbers are the equivalent of about 44 percent of the water used by metro Atlanta in 1 year so that was pretty significant to be able to demonstrate that kind of savings. Next slide. This tracks the water savings over time so as you can see we were on the next slide again really excited to be able to share some of the figures relative to about 260 Olympic-sized swimming pools and then the total savings coming to almost 2,000 swimming pools. So water is always an issue in the southeast and all over the country so we were excited to be able to show that kind of savings and water is expensive here as well so the monetary savings was significant. Next slide.

This basically says the same thing in a little bit. You can see a small dip in 2016 because we added a lot of buildings that year so we had to really go back in and take a closer look at the data again to see why some of these trends are as they are but we still were able to meet our goal. Next slide. We wanted to in addition to acknowledging the energy and water savings we also wanted to acknowledge the economic development impact that this program had. We have estimated that there were at least 220 jobs added, we added about $16 million in regional economy from the energy and water investments and efficiency investments made related to the program. Next slide.

I won't go over in detail all of these emissions impacts but I will point out here some of the health impacts that we started to track as well. On the next slide we calculated the societal benefits from avoided pollutant emissions in 2017 to be about $2.5 million. On the next slide we started to also map out those impacts and realized air quality does not stop at the border, that there is an impact beyond just even the city of Atlanta and it can be seen in several of our regional cities as well. Next slide. These were some top counties with public health benefits as well.

And then the Atlanta Better Buildings Challenge Greenhouse gas emissions are summarized and we really said it was about the equivalent of flying from Atlanta to Sydney, Australia almost 140,000 and that since 2011 the emissions save is the equivalent to shaving 1/2 of a full fired power plant from the grid for a year. All of these impacts wouldn't have been possible to even calculate without our technical partners so again I'll reiterate the importance of the data management from the beginning, that we made sure it was all very quality-controlled and well managed by our technical partners along the way.

The next slide again talks more about the Georgia economic impacts that we've kind of already covered and then I'll just quickly say that on the next slide you'll see our mayor's quote, the current mayor at the end of our 2019 and really all of this is to say that our mayor is supportive of this program. It's really launched the sustainability program in the city of Atlanta. Right now we've been able to manage a commercial building energy efficiency ordinance, we've further refined a sustainable building ordinance, we're working on low-income housing and energy efficiency, new financing strategies, and even energy savings performance contracting in the city of Atlanta has all been managed out of our office and I think that The Better Buildings Challenge was really the first kickstart of a lot of that work so it's made a big difference here in Atlanta. And I'll stop there.

Cedar Blazek: Great. Thank you so much Shelby. I did have 1 question that came in for you and I'm just going to ask really quick. Who did you say your data partner was and did you have dedicated data entry staff?

Shelby Busó: We did. Southface Energy Institute was our technical partner and they did have dedicated staff members. It ranged in time from 1 full-time employee to 2 or 3 – *[loss of audio, 0:19:13 – 0:19:22]* – have that full-time support staff, which helped not only with data aggregation and calculations but also on the front end getting our building – *[loss of audio, 0:19:32 – 0:19:40]* – thought about

outsourcing that process at the beginning of the program but really realized eventually the program would end and that we managed to have value in teaching them how to fish if you will.

Cedar Blazek: Great, thanks Shelby. I really appreciated your presentation and that you were able to share really the importance of data and that's 1 thing that we really stress within the Better Buildings program and the Better Buildings Challenge specifically but also your views on the importance of communicating the results and communicating that data in an effective way to get people excited and involved. So I think a number of you are already answering our next poll but if you haven't jump on the Slido. We're looking at the industries you all represent so at least right now it looks like we have a lot of industrial sector partners followed by higher education, commercial real estate, and we have a variety of others as well and if you don't fall neatly into any of these categories there is an other or you can mark the 1 that you work with the most. It seems like industrial is the clear winner right now. We'll leave that poll running, we'll come back and check on it in just a moment, and you can remember to submit your questions for any of the presenters at any time through the Q&A portion of Slido.

So next we're going to hear from Jim Henry. Jim is a Senior Governance Risk and Compliance Analyst at Iron Mountain Data Centers and leads their Global Energy Management Program. He's primarily responsible for enterprise IT risk management and the overall program management of their ISO 50001 Certified Energy Management System. While leading this program IMDC's portfolio has grown from 3 US sites to 13 sites under certification stretching across the US, Europe, and Asia-Pacific. Jim has been heavily involved in the development of the company's renewable energy program as a strong advocate for pushing the limits on setting energy goals and strives to innovate new ways to increase energy efficiency across the organization. Jim, please take it away.

Jim Henry: Thanks Cedar. Hopefully everyone can hear me okay. So as said I'm from Iron Mountain Data Centers. You might recognize the Iron Mountain name just from seeing trucks on the street or from seeing boxes laying in warehouses and things like that and that's still the same company that I hail from. So Iron Mountain globally has 2,000 locations, roughly 25,000 employees, we're in 50 countries across 5 continents so we're a large multi-national. But as we're structured we have different business lines, one of which is the Data Center business line. So I guess the first and most important thing is no matter what your industry is everyone has a data center. You might not know it but you inevitably have a data

center and even if you're unemployed you probably have some involvement in a data center because you still have a cell phone, right? So everyone's got a data center in their life. That's what powers what we do, it's what powers the apps, and the different services that we utilize. So that's kind of where our niche in the market is and we're not obviously a proprietary data center like you would have in the basement of your building; we're co-locations. So what means is we're basically a big warehouse full of everyone else's servers that we physically store and maintain the actual environment around it so one could imagine naturally there's lots of energy used.

And then I guess the better question in all this is why is an IT risk guy involved in energy management? Well when you think about it what this boils down to is risk management at a toll. So when we have so much energy used in an environment like ours it's only appropriate to govern how we use it and use it responsibly because of course our IT environment and the folks that are actually provided the servers, our customers, they use what they use but the closer that we can bring our overall facility to what they're using the better and that will boil down to a metric that we'll look at in a few slides. Next slide please.

So I kind of discussed the global Iron Mountain footprint but beyond that Data Center specifically has a very small subset ahead of that. We've got 15 Data Center locations, which you can see on the map here, over 1,300 customers across those locations, and other than some of the more granular stuff that we do routinely in order to improve our energy use we've got about 15 really needle-moving projects going on across the portfolio. And then of course part of our story beyond just how we use our energy is how we source it so we are 100-percent renewable power-sourced and we do that in a pretty unique way in order to pass that through to the customers that are in our buildings so we'll get to that later.

And then this last data point I would've had a beautiful photo to show all of you in the next slide but I just got the photo yesterday after we started turning all of it on. We recently installed the largest data center rooftop solar system in the US and it's a 7.2-megawatt system on top of our New Jersey data center, which is a massive building. It's nice and flat, right, you might say you've got locations in Arizona, why are you building something in New Jersey around solar, but it's a massive building, it's a large array, and it accounts for roughly 7.2 to 7.5-megawatts of the load that we're actually using at the data center. Next slide please.

So our energy management story actually starts with Better Buildings. The Data Center business line in Iron Mountain hasn't been around for that long. We've only really been around since about 2012, 2013 when we started getting established. In 2016 that was when we first took the first leap and we kind of figured out that energy management is going to be something that's really big in the data center world, more importantly co-location, which is that kind of corner of the market that we're in because of course now you've got hyper scalers, you've got proprietary, you've got cloud, you've got edge computing, so there's a lot of different types of data center deployments and even us we have some of those as a subset of co-location, but we had 3 sites in 2016 and at that point it was a good decision for us to get just a couple of those in the program to see how we could do, to see how we could improve, and take kind of that first responsible step back when there wasn't a whole lot of data centers doing this.

There's definitely a couple of notable ones that are still doing things nowadays and we applaud that and it's great to have them as partners and peers, but back in 2016 there wasn't a whole lot going on so it was kind of a leap of faith into the unknown. So back then we made a goal with Better Buildings in the Data Center Challenge to reduce the non-IT intensity by 25-percent over 10 years. Little did we know that a lot of the projects that we were doing would land us a couple of years later actually hitting the goal 7 years ahead of time, which is pretty cool, and it allowed us to set some more goals, which I'll get to shortly.

So kind of riding on setting those goals in 2016 we decided that it was great because Iron Mountain historically is 1 of the most heavily audited companies that you can imagine. We're big on security, we're big on privacy, integrity, and that's the world that I come from so naturally in 2017 that's kind of what I was roped into the program and said okay, we've done some external reporting through DOE but what can we do to actually tell the story and have a third party verify it and look at it? That's where ISO 50001 came in. There's a lot of folks on this call from the industrial sector that are really probably at least familiar with ISO 50001 or for those who like the long-winded version ISO 50001, right, and if you're into ISO standards like I am there's 1 for everything and they're like Legos.

So we took the leap of faith and we said okay, we've got projects, we've got improvements, we've got all these other things that we're doing; let's get it certified so we can show our customers and our stakeholders that we're doing something about it and we're not just

saying it ourselves. So that said we went ahead and certified the portfolio, then it was just 3 sites, a site in Boston, the site in Pennsylvania, and then the site in Kansas City, and we did it and since then we've been certified. So that was kind of the second leap. Next slide please.

2018 was a crazy year. 2018 for us was when we started realizing that energy efficiency was really hard at-scale. So we were doing projects, which I'll highlight here in a couple of slides and I'll show you how we've actually done energy management, but in 2018 we acquired a bunch of buildings so we went from 3 to roughly I want to say 13 or something like that in a year. So there was a site in Denver, 2 sites in Arizona, a site in Ohio, a site in New Jersey, a site in Singapore, a site in London, and then eventually a site in Amsterdam so United has been getting a lot of miles from me lately. But more importantly what we had done at that point was expanded this so much so that we had to really strategize around how do we focus on the data, and I know we talked about data in the last presentation; it is simply the most important thing to get good, clean data that you can trend and that was important for us.

So when we acquired all of them the first thing that I did was met with every single manager and basically said, "Hey, I need the best energy data you can get so I can see where you're at, we can benchmark it, and then set some goals," and that's what we did. We started some projects based on that too. So with that said we were the first data center organization to certify an entire enterprise multi-site system in 50001, which was a huge accomplishment for us and we still stand as the only one doing that right now. So riding off of those same kinds of things in 2018, 2019 brought us some even more crazy stuff. We decided to build a couple more buildings in the course of all this, we added a site in Manassas, Virginia, we built a site in Phoenix, Arizona so we have 3 in Arizona now, we built onto a couple of buildings; we've been slowly increasing capacity since 2016.

So you're probably wondering how do you do energy efficiency when your business model is to scale? Well it's exactly as I described, right? We've got customers that use a set amount of kWh and we've got our own load that runs the building so the closer you bring those together the better your power utilization effectiveness is. And as we get into the next couple of slides I'll kind of show you how we've done that.

So in 2019 this was the year that we shattered our Better Buildings goal 7 years ahead of target. So what we ended up doing at that

point was I got a call from DOE and they were like, "Hey, you met your goal. Do you want to set some more goals?" and I was like, "Absolutely. This is a great idea," so this year we not only set a couple of new goals but we also got another site into our program and I think it's something along the lines of like 30 percent over the next 5 years, which is awesome and we're really excited about it.

Additionally in 2019 we launched a program for our customers where not only do we want to run our data centers efficiently but as I said we're 100-percent renewably sourced so we worked with different peers in the industry and different NGOs. Largely it was another group in the organization that wanted to pass our renewable credits through to our customers because they're using the same power that we're actually purchasing and sourcing. So we launched a project called *Green Power Pass*, which is a first in the industry solution that gives our customers the empowerment to claim green credits from us that count towards their CDP, all their external reporting, any renewable energy reporting, RE100 goals, science-based targets, so that was a big step for us that I can talk about more later. But the most important part I guess is the next couple of slides. Next slide please.

What have we actually done? So projects and advancements, I'll preface this by saying these 2 things I'm about to talk about I'm not lying to you. We have an underground data center in Pennsylvania that I'm very close to, it's actually been my home site for the last 4 years. Here in Pennsylvania we've been tweaking our cooling systems and utilizing an underground lake; those are the 2 things I'm not lying about, the lake and being underground. We're 200-feet underground. We use an underground geothermal cooling system for part of our co-location space. It actually kind of acts like a radiator so to speak and we use free cooling as well so when we don't need to use other systems to cool the data center we're pulling in that cool air during the winter months, which is popular in the industry, but pair that with an underground lake with recirculated water that's nice and cool and you've got a geothermal cooling system that's very efficient. So 1 of our constant advancements is having the very intelligent data center managers in that facility tweaking that system and then installing some advancements and projects that I'll talk about in the next few slides. Next slide please.

So in 2018 and through 2019 and actually still going on now we kicked off a large project in our legacy data center in order to just maximize our air efficiency. In the Data Center Challenge part of Better Buildings there's a lot of talk about hot aisle and cold aisle

containment and that's really important to us because in a data center if you're just throwing hot air around then you're having to cool the equipment even more so segregating that air and studying how that acts in your data center environment is 1 of the most impactful and important things that you can do.

So we kind of – this is something we do as standard now but what we're really focusing on is looking at the problem areas from our older parts of the data centers and putting in these containment projects to where we can reduce our power utilization effectiveness and bringing that facility load number closer to the IT load number, which is the customer number, and ultimately with the specific project that we launched in 2018 in kind of the modeling you see down below this is CoolSim modeling that can actually show you return air temperatures and even improvements. We were able to bring the power utilization effectiveness down 10 percent so it was a nice project. This was one that we highlighted in our ISO 50001 system to show continual improvement among others and this is kind of 1 of the best steps in data center that you can make is managing your air because of course when you manage your air you can bring your fan speeds down and use less energy. Next slide please.

This is just a little bit more on that project; it's what it actually looks like so you're not looking at a simulation. Obviously if you've seen 1 data center you've kind of seen them all unless they're underground like ours, right? But for the most part what we're doing is taking those data center racks and separating the hot air so it can go back up in the plenum and not actually go out and get in and interfere with the cold air again so not only does the equipment stay cool and that brings down the risk level but ultimately like I said it makes for more efficiency. Next slide.

Another project that we had was very similar in our Kansas City data center, which is also underground. We did a fairly – well it's a very small data center but we did a lot of containment there. The team did a great job and it brought their power utilization effectiveness level down from 1.83 to 1.68, which is – I don't know what percent that is but it was a very nice jump for the overall site just like our Boyers site that I just highlighted underground. Next slide please.

Our Manassas, Virginia campus is kind of unique in the fact that it's brand new. So some folks in the data center industry might wonder what can you do to a brand new site to make it more efficient. Of course installing containment for your customer racks

is number 1, which we're doing, but also we're engaging a lot of folks not only in our own organization but outside of the organization to come in and tune our building management systems in order to get the maximum energy efficiency out of all the equipment that equates to our cooling system so that's a big step. We're looking at a target PUE of 1.3 so depending on what industry you're in that might mean a lot to you or it might be jibber-jabber so feel free to ask me questions about it, but it's a pretty efficient data center when you think about co-location. Next slide please.

So these are just some more shots of the data center. That's a completely empty data center on the left and 1 of the Cray alleys on the right. What's important to highlight about this is when you build a data center and you don't have any racks in it you're not cooling it a whole lot but you're still using energy. So the team out there does a really good job of covering up those perforated tiles when they're not really being used heavily in order to just eliminate the amount of air that's coming out, being wasted, thrown around so those are just best practices that we do. Next slide please.

So those were just a couple of examples of things that we continually do. Obviously we're doing some more things around how we source our equipment, what kind of specifications we look at. We're bringing in outside organizations to do third party assessments and studies of our data centers to highlight deficiencies and improvement opportunities because my word and everyone else in the organization is great but it's great to have a third party come in and make an assessment, have an opinion because they're independent and objective and as a career auditor that's really important to me especially for the 50001 program.

So that kind of brings us to wrap this up and saying that 1 of the things we've been looking at now are some new containment measures. This is the Schneider Electric ExoStruxure Pod. We were testing this at the brand new data center in Phoenix that we built. This isn't what 1 of our customers just went with, they went with something from Chatsworth, but that's just kind of an attestation of the fact that we look at many different things and our customers do before they decide on something because they want the most efficient product possible. Next slide please.

As well as the containment of course when we build a data center we like to source our equipment from places that are not only responsible but they're building things that have economizer modes on them that enable us to actually unlock the full potential of the

equipment and tune it so we can actually have a more efficient set-up and over time unlock things from data that we can pass off to other third parties and have them assess where we can improve. Next slide.

I'll close on kind of a couple of different notes. I think I have like 60 seconds left according to the timer so Cedar doesn't kill me. Green Power and innovation, so this is where as I discussed earlier we have this product that we rolled out where it's not really even a product; it's just a breakthrough in the industry. In the past data centers weren't able to pass any green credits through to their customers, but really when you think about it makes sense if you're in my data center you can use my energy, you are using my energy, so if we're completely covered by renewable energy what we do through the ISO program through 50001 is sit down with our auditors, third party attestation, independent, objective, they pull all this data together with us, they look at our virtual power purchase agreements, they look at our retail supply agreements, the recs, they break down the data, they look at not only our efficiency too but what we're using in Green Power gets that with our customers and we write these lovely letters of attestation that count towards bringing down the emissions impact of our customers because data centers use a lot of energy. So I guess to bring it all in, next slide please, there's just a couple of notes on this, but Iron Mountain really wants to take that first step of being an efficient data center and then kind of passing that onto our customers. So that's our story and I'm really proud of our teams and what they've been doing. There's a lot of folks involved and it's worked out great so far.

Cedar Blazek: Great. Thank you so much Jim. I'm going to ask you 1 question really quick and like I said we'll get to more Q&A at the end. But can you speak a little bit more to how ISO 50001 helped you reach your energy goals, what you saw the biggest benefits to that were?

Jim Henry: Yeah, in short without taking up too much time because ISO 50001 is 1 of my favorite topics to talk about, it forces you to continually improve. So if you set key performance indicators or in 50001 they're ENPIs, Energy Performance Indicators, every year you have to improve those performance indicators, which number 1, kind of forces you to be wise about your decisions and then also to use projects to contribute to them to be better. So every year when your auditor comes back they're expecting to see improvement and if they don't see improvement then obviously you can't be certified anymore. So that's a real, very true business driver. The data doesn't lie, the outputs don't lie, and it forces you to also engage

senior management at whatever organization you're in. So I have multiple conversations a year with our senior leadership about how we're doing, how we can improve, and if I'm doing my job and if other folks are doing their job too. So it's a nice, vicious circle in a very positive way.

Cedar Blazek: Great. Thanks so much for that presentation. All right, so let's jump back and take a look at the poll of who is joining us today and who is represented here. I think industrial is still by far the lead but higher education is catching up. We have a lot of governments joining us as well as some multi-family and commercial real estate and I think this next presentation will be particularly interesting to you all. All right, we're going to do a third and final poll that should come up. I'd really like to dig into what you all are actually up against in meeting or setting energy goals so in a few words what are the biggest challenges to implementing energy efficiency projects at your organization? Yep, data collection and cost, funding, lots of dollar signs, great. Lack of a utility master plan, interesting. I think the most common ones I'm seeing are really related to cost and data. Stigma is really interesting; I might want to hear more about that.

Okay, we'll leave that up and running if you want to keep inputting and you can track and follow along what's being entered, but to wrap this up we're going to hear from Megan Saunders. As the Director of Sustainability for Lendlease's Communities business Megan provides strategic direction and leads the execution of sustainability strategies for Lendlease's military housing, privatized Army lodging, and residential development portfolios. She's worked in sustainability and the build environment for over 10 years as a lead consultant running a non-profit focused on efficient building operations and as the sustainability director at a design firm as well as a green building incentives start-up. Megan holds a master's degree in city and regional planning from the Bloustein School at Rutgers University and sits on the USGBC Technical Advisory Group for Location and Planning. Megan, I know you had some audio issues earlier. Do you want to test it out? Can we hear you?

Megan Saunders: Yeah, I hope I'm back now.

Cedar Blazek: Yeah, you sound great. Go ahead and take it away.

Megan Saunders: Okay. And I apologize, I hope I don't drop off again, but if I do I'm just going to call back in so thanks. And yeah, good afternoon; thanks for having me. I'm going to speak to you today as Cedar

mentioned about Lendlease's Military Housing Portfolio, which we committed to the Better Buildings Challenge in 2011 and how we've been able to meet our goals by building back better. Next slide.

So for those of you who aren't familiar with Lendlease I'm just going to give you a little bit of background on the company. Lendlease is a leading international property and infrastructure group with operations in Australia, Asia, Europe, and the Americas. Our vision is to create the best places that inspire and enrich the lives of people around the world. We are headquartered in Sydney, Australia and have approximately 13,000 employees internationally. Our core capabilities are reflected in our operating segments of development construction and investments, which provide us a sustainable competitive advantage allowing us to provide innovative, integrated solutions for our customers. Next slide.

We believe that the value of what we do at Lendlease is more than just the financial transaction and our legacy is more than the physical presence of our communities and buildings. We measure our success by the positive outcomes we affect in 5 focus areas of value creation and they are health and safety, financial, our people, our customers, and sustainability. For sustainability we measure our success by reaching industry first in order to push for better outcomes for both people and the planet and I'll go into the details of our sustainability goals a little later in the presentation. Next slide.

So in the US Lendlease's Communities business includes a large military housing portfolio, which is committed to The Better Buildings Challenge. Congress established a program in 1996 to raise private sector capital to modernize military housing known as the Military Housing Privatization Initiative or MHPI. In 2011 – or sorry, in 2001 we commenced a public/private partnership with the Department of Defense where Lendlease owns, maintains, and operates military housing via a 50-year lease. We also partnered with Winn Companies who manages the day-to-day management of all the Lendlease military installations throughout the country. Next slide.

So you can see here Lendlease owns and manages 19 military installation across 12 states ranging from Hawaii to Alaska to Massachusetts. There's approximately 40,000 homes and 192 apartments for a total of 61 million square feet. We have completed over 15,000 new builds and over 25,000 renovations

within our 40,000-home inventory. The majority of the homes are on Army installations and the remainder are split among Navy, Marine, and Air Force homes. Next slide.

So some key milestones along our Better Buildings Challenge journey and also our sustainability journey within the company, over the last 9 years we've had significant reductions in our energy usage while continuing to adopt new sustainability targets for our organization. Lendlease committed our MHPI portfolio to The Better Buildings Challenge in 2011. In 2013 we actually achieved the 20-percent reduction goal by the end of the calendar year and had actually completed a large number of new homes during that time. In 2014 Lendlease globally set a new 2020 sustainability target for a 20-perent reduction in energy, water, and waste across all of our portfolios. Over the next few years we continued to spend more time renovating and rebuilding our portfolio. We also achieved some other major sustainable milestones including installing various solar arrays, which I'll go into further. In 2019 we released a new sustainability framework, which reflected the changes in our business, our clients, and the planet and I'll go into that a little bit more and then this year we are launching our new post-2020 sustainability targets, which will start in our fiscal year '21. Next slide.

So this is our current sustainability framework that I mentioned. It was informed by consultation with our investors, clients, employees, and stakeholders, and it was updated in 2019. So we focus our efforts on these 3 pillars or imperatives where we believe that the impact of our work is the greatest and each of them is supported by an environmental and social focus area. So the imperatives are sustainable economic growth, creating vibrant and resilient communities and cities, and fostering a healthy planet and health people. Next slide.

So in addition to our sustainability goals there are several other key factors in the business that made it possible to achieve the level of EUI reductions across the portfolio. First is really on the data side. Being able to collect the energy data from homes and closely track and monitor that data through the utility bills has helped us understand the opportunities and impacts of energy conservation measures across our portfolio. Second, we work with utility managers on each site at each of the installations to track the performance and identify opportunities. Examples are looking at local utility rebate programs and this helps us create a feedback process that's been intrinsic to our success.

The third is working with the Department of Defense on their conservation programs that they created, which provide monetary incentives to residents to reduce their energy use. These are known as RECP or Resident Energy Conservation Program and UA, the Utility Allowance Program. These programs are currently suspended but were instrumental in reducing consumption over time and Lendlease is currently reviewing the contributions of these programs and working with an academic institution on that. And then finally given our 50-year contract we are a long-term owner of the homes and they have gross leases so there's additional motivation since energy efficiency is a driver both from our sustainability goals but also from the bottom line. Next slide.

So now you have some context about Lendlease and our portfolio and I'm going to dive a little bit more into the data. Next slide. So again we committed to The Better Buildings Challenge in 2011. We started at a baseline EUI of 122 at that time. We achieved our 20-percent reduction goal in 2013 and currently as of reporting at the end of calendar year '19 we are at 36-percent reduction. Next slide. So over the same period of time we've continued to increase our usage of solar and renewables across the portfolio. Currently we have approximately 34 megawatts of solar producing 41 million kWh from our PV or about 8 percent of our portfolio's electric consumption and this is the equivalent of energy use for about 3,300 homes for 1 year. Next slide.

So a key takeaway regarding our performance is that we've increased our efficiency as our portfolio has continued to grow. The portfolio actually started with approximately 51 million square feet at the time that we committed to the challenge and currently we have as I mentioned 61 million square feet so we've added 10 million square feet or about 20-percent increase in the size of our portfolio during this time. So as you can see as the size increased our EUI has continued to trend downward as a result of building the house back better. Next slide.

So I'm going to highlight a few case studies so you can see what we actually did in several of the military installations to get a clear understanding of the work. Next slide. So at a high level all of our installations have reduced their EUI by at least 10 percent with the majority having reduced their EUI by 20 percent or more. The case studies that I'm going to highlight are in that higher category. Next slide.

So the first one is Davis Monthan Air Force Base, which is part of our Soaring Heights community in Tucson, Arizona. Starting in

2008 we constructed 500 highly energy efficient homes built to the Energy Star Home Standard. We also worked with the local utilities there, Tucson Electric Power, on their Guarantee Home Program, which required inspections of the homes during construction to ensure that the energy efficiency standards we designed were met and in turn they guaranteed the homes heating, cooling, and operating costs and overall comfort for up to 3 years, which resulted in up to 35 percent energy savings. In 2010 we installed 6 megawatts of ground-mounted solar and in 2014 the Air Force launched their Resident Utility Conservation Program that I mentioned earlier to help reduce utility costs by incentivizing residents. Finally we completed some street light improvements in 2016 where we converted fixtures with sodium bulbs to LEDs and as a whole this base was able to achieve a 63-percent reduction in EUI over that time period so pretty impressive. Next slide.

So another example, this one is Peterson Air Force Base, part of our Tierra Vista community in Colorado Springs, Colorado. They had a number of projects that contributed to their 62-percent energy reduction, which I want to point out is combined along with Schriever Air Force Base, which is included in that graph at the right. For the purpose of our Better Buildings Challenge reporting they're actually reported together. But specifically for Peterson in 2011 we added 2.3 megawatts of solar. We also developed a unique water conservation program, especially in this desert climate where water resources are limited. We moved from a turf landscaping to xeriscaping using native and drought-tolerant plantings and irrigation controls with weather sensors. We also conducted a unique resident engagement campaign to increase awareness of these new landscaping features. The program was able to reduce water consumption by 39 percent and generated about $162,000 in savings each year and helped us to reduce the EUI because of less pumping power required to move the water. Additionally in 2013 we worked with the Air Force with their utility conservation program and after demolishing and rebuilding some 500+ new homes to LEED Silver Standards in 2014 we also committed those new homes to the utility savings program as well. Next slide.

So last case study I'll highlight Island Palm Communities located in beautiful Honolulu, Hawaii. In 2013 we began installing 11.2 megawatts of solar through a power purchase agreement with Solar City, which is now part of Tesla. In 2006 we started installing a solar hot water system on all of our homes, which is actually required now for single-family homes in the state of Hawaii. Between 2011 and 2016 we built over 1,200 new homes built to

Energy Star and LEED Standard and in 2018 and currently in progress we've utilized our Energy Security Solutions Team to develop a $150 million project to reduce energy consumption by an estimated 32 percent through HVAC replacement and some other energy efficiency upgrades that will include interior lighting, street lighting, building envelope improvements, and low flow water upgrades and an additional 6.4-megawatt rooftop solar system. Next slide.

So in addition to rebuilding we've utilized some other strategies that have helped us reduce the EUI across our portfolio. On the design side we have developed some design strategies for greater efficiency and this included 2 net zero homes on a military installation at Fort Campbell in 2010 and the first zero energy home in the Navy and Marines in 2012 at Camp Lejeune. We're always looking for new, innovative technologies and we installed a building energy management system at Fort Campbell in about 5,000 homes resulting in a 16-percent energy savings using programmable thermostats and dashboards to allow residents to see if there's more efficient ways of achieving comfort in their homes. Our water conservation projects have also helped to reduce water consumption by over 500 million gallons therefore helped to decrease our pumping energy and our EUI. I mentioned before our ESS group, Energy Solutions and Security, is actually a joint venture we established in 2015 with Ameresco that provides alternative financing through an ESCO model on various projects across our installation. And I'll just point out here this photo is actually that solar array at the Soaring Heights Community that I mentioned earlier. Next slide.

This one I'll also mention just because I think it's a really cool picture too, this is at our IPC project, Island Palm Communities. You can see the solar film on the garages of those homes and then the solar hot water on the roofs as well. So what's next for us as we continue our journey to reduce EUI and our sustainability journey for this portfolio? We are announcing as I mentioned our new post-2020 sustainability targets connected to that new framework this year and we'll be taking the targets really to the next level by shifting from energy to a long-term outlook on carbon and we'll be using the same type of mechanisms that we used to help us get there. We also recently endorsed the Task Force on Climate-Related Financial Disclosure known as TCFD globally, which will help us to inform the future target from a carbon standpoint. In addition to our shift to carbon we're working refining our metering strategy, working on design specifications for new construction and renovation work, and generally just taking a much broader

view on climate across the business. Next slide. And that's it. Thanks for having me. I'm happy to take any questions and I left my contact information anyone wanted to reach out directly.

Cedar Blazek: Great. Thanks so much for that Megan. I really appreciate you sharing a specific look at some of those case studies and the actual buildings that you work with. I do have 1 question for you. Right now do the occupants of your housing pay for their own energy usage? Do they pay their own energy bills?

Megan Saunders: No. The occupants pay something called a – they basically have a housing allowance that covers all of their costs and so we pay the utility bills on behalf of all of the residents.

Cedar Blazek: Great, so you have a big incentive to keep those low.

Megan Saunders: Yes.

Cedar Blazek: Okay, next slide. We're going to take a quick look back at that poll. Hopefully you all entered in some of the challenges if we could bring that up. Yep, first costs, building owners reacting to emergencies, we see that a lot and it's hard to plan when you're in an emergency to make sure you're making the most efficient choice. Return on investment, funding. I think I'll ask some of our speakers about how they were able to get some of their funding in just a moment. And one thing that I will mention is funding costs, ROI, first costs, we hear that all the time when it comes to energy efficiency, which is tough because you know it's going to save costs in the long run. I do want to put a quick plug in for our Better Buildings Financial Navigator. You can find that on our Better Buildings Solutions Center. It's a pretty great tool where if you're feeling stuck, if you're feeling like you just don't have the funding up front to look at the variety of financial options that are available to you and potentially some that you haven't yet considered so I'd encourage you all to go check it out. Okay, next slide.

So today we heard from 3 different speakers on their winning strategies to reduce energy and to meet The Better Buildings Challenge. Over the last few years we've noticed that all goal achievers have at least these 4 things in common: goal achievers had to pitch and gain approval from senior management to join the challenge and I saw that a lot of you found that as a hinderance to your efficiency goals, then they had to engage the entire organization and effectively communicate their results. All the goal achievers established strong metrics, I think you heard that from everyone, all the data that they were showing, as well as data

tracking systems. And then finally once you have all that do the hard work of strategically implementing cost-effective measures that really put them over the top so I think we heard some pretty unique approaches today. Next slide.

So hopefully this presentation has got you all inspired and thinking, "What can I do next? How can I do better?" Implementing energy efficiency strategies in your buildings and your business can improve all aspects of the triple bottom line, especially helping employees and occupants feel more comfortable and engaged. I encourage you all to continue to learn from the leaders in this industry and also to become leaders yourself. So without further ado I'd love to jump into our Q&A discussion. As a reminder you can submit questions for our panelists at Slido.com using your internet browser or your mobile device. If you missed the beginning you input code #BBSummit and select our session, which is The Secrets of Better Buildings Goal Achievers from the drop-down menu. You can submit your questions or use the thumbs-up symbol to up-vote existing questions that you'd like the speakers to answer. So we're going to go ahead and get started and first I know Shelby's audio we lost you a little bit. Do you want to do a quick audio test Shelby?

Shelby Busó: Sure. I called in. Is this better?

Cedar Blazek: That sounds good to me. Thanks.

Shelby Busó: All right.

Cedar Blazek: All right, so the first question I want to ask is related to funds and funding. Obviously reaching over a 20-percent energy reduction is a pretty big feat and requires some up-front costs and I'd like to hear from each of you about how you found the funding to implement these projects so Shelby maybe we'll start with you.

Shelby Busó: Sure and I should clarify too 1 of the questions I saw come in reminded me I didn't necessarily specify our participant dates. I broke it down by building type but didn't acknowledge that the Atlanta Better Buildings Challenge is comprised of both public and private sector building participants so there were a lot of buildings that had to voluntarily commit to the program that we don't have any control over so that's why recognition was such a strong lever for us to encourage investment in private sector buildings when we didn't actually have the power to require it at the time. And so for our own buildings and for the program management costs up front we actually relied on our partners and our staff time to do that so

the Downtown Improvement District was the one to commit most of the marketing money to get started but we also had a sponsorship platform established for program management ongoing.

Since we had education opportunities monthly and recognition events we had a lot of vendors in the area that wanted to get engaged and provide solutions for our participants. We had over 100 million square feet participating so this was a marketing opportunity for a lot of our partners. So we based this off initial investment from the Downtown Improvement District who hired a full-time staff member to manage the program and then we had a sponsorship model for ongoing program management and again we didn't have to necessarily consider investment in the energy efficiency upgrades in the private sector buildings; those were really on the buildings to own and see their return on their investment through the energy savings that they realized.

Cedar Blazek: Thanks Shelby. How about you Jim?

Jim Henry: So there's 2 sides to this and it's actually kind of interesting because I can parallel to what Shelby just said because like in co-location data center we've got ourselves that we have to worry about, right, so that would be kind of like the city and then our customers, that's the kWh per month that we can't control kind of like a private business in her case. So with us it's more of a relationship with the customer and giving them the education on why it's good to contain their data center racks and adopt better air management practices. So some of that costs, sometimes we'll adopt that cost, which obviously comes through some lobbying with our leadership every year and saying, "Hey, we need this much money to deploy air management," but our return on investment is like tenfold once you install that stuff so you do save a lot of money.

That's 1 of the great things about data centers is either you're doing it right or you're doing it wrong and if you're doing it wrong you're just throwing away money. So it's really just showing good metrics. One of the things that I mentioned is that we – obviously we're 50001 certified so we have to have yearly management reviews with our senior leadership so that's usually the time when I'll say, "Hey, this is what it looks like financially if we don't do this and then this is what it looks like if we do," and that's really powerful. And then like I said working with customers sometimes the customer will absorb some of that cost for improvements, which is great, but that doesn't always happen. So I'd say the

biggest thing for funding is just having clear KPIs, having, good, clean data and then engaging with the senior leadership on the ROI and sometimes ROI is not easy but you've got to be really strategic.

Cedar Blazek: Very true. Thanks Jim. How about you Megan?

Megan Saunders: Yeah, I definitely echo a lot of those comments. Certainly for some our work we've been able to fund through our utility accounts, especially where the payback makes sense with some of the conservation measures. We've used various models for our solar installations as well. I mentioned we have an Energy Solutions group that acts as an ESCO and so that's helped us with some alternative financing mechanisms for those projects. And then also really looking at the value in other ways, I mean of course ROI is very important but there's also other ways to look at value and sort of making the case to leadership that goes beyond the economic value and certainly as well with our partner, the Department of Defense, and their own goals that they have for our portfolio so making sure that everything is aligned with the bottom line as well as our company's values for sustainability as well as what our partner wants.

Cedar Blazek: Great. Thanks Megan. All right, I'm going to jump into some of our audience questions. Thank you all for submitting them. Shelby this first one's for you and I just want to say I appreciate our speakers today going in and helping respond and answer some of these questions already but I might ask them verbally so it can get captured on the recording. So Shelby this question is did you work directly with the local utilities to obtain data and if so how did you get buy-in? And then there's actually a follow-up, which is how did your tenants self-report data usage, was it monthly or quarterly, and what format did they submit it in? So if you can just talk a little bit more about your data collection process.

Shelby Busó: Sure, sure, and it is an important note because we had to test it through The Better Buildings Challenge and then it ended up being a platform that we used for our ongoing benchmarking requirements that now is legislated in the City of Atlanta. So first off when we started the program we committed in 2011 but like I mentioned we actually accepted baseline data all the way back to 2009 so that was a pretty heavy list for buildings that hadn't necessarily been tracking their data in the platform that we selected and encouraged folks to use, which was Energy Star Portfolio Manager.

And so we did have each participant when they signed on and got

their welcome packet fill out a utility data release form that we had pre-negotiated with Georgia Power and then also with our Department of Watershed Management, which is a municipal utility for water. We had a little bit more – a little bit – obviously they are a municipal utility so we had some allies there to help us with that data gathering. It got a little bit trickier when we were talking about gas, which is still used in several of these buildings for heating, but we did partner to get that historical data so that our technical partner Southface could help input the 2009 to 2011 or whatever their start date was just to get over that initial hump but then we had trainings with the buildings themselves to make sure they walked through the process of tracking their own data in Portfolio Manager because we really saw the value of them owning that ongoing reporting since the program would end eventually.

And we required reporting annually, which is still what we do through our benchmarking ordinance that's on the books. We were around any time of the year and tried to check in and provide support periodically to just make sure that if anybody was facing any challenges they could come to us and talk through what those were but it was only required once a year.

Cedar Blazek: Great. Thanks Shelby. Jim, this next question is for you and it's also around data. How do you streamline the collection of monthly utility data for your portfolio?

Jim Henry: I think there's a little bit of an unfair advantage in data center because our primary cost is energy, right? It's literally like other that security it's 1 of the number 1 things that as leadership we look at so it's like if you're using more energy then obviously it's something you want to report on very frequently and really look at it at a granular level. So the way that I've responded and I can elaborate on it is that for 50001 we're required to have a data collection plan; it's part of the standard. And so we do that but we require our operations managers to report on the energy use of both the facility and the customers every month. That way we can kind of look at a forecast of capacity, how much more we can deploy based on what the utilities can even give us, and then more importantly where we can see where we saved.

So it's all through governance, which is why I'm so involved in it is because I kind of have the hooks around the organization to have people reporting things on a consistent basis for analysis. So as those are reported monthly we can notice trends, we can catch things that are really – that are happening that might be really bad before they fester and maybe the energy use gets worse, so it's

really through governance and the implementation of formal systems that hold people to doing those duties like every month and we use the same reporting format for the most part. Through acquisitions that's tough, right, so if you acquire a business that does nothing the same way that you've done it obviously that's a learning curve but we've tried to standardize a lot of the same data that we're getting and if we need to install meters we do that so there's multiple points. But like I said the 1 advantage we have is in data center you care about the energy use so everyone's reporting it anyway but to streamline it we set up a frequent mechanism for them to do it with frequent touchpoints, consistent formatting, and then reviews with senior leadership like twice a year.

Cedar Blazek: Thanks Jim. Megan, this next question is for you. Can you tell us more about the resident engagement program with regards to your landscaping program and what aspects were successful?

Megan Saunders: Yeah, so sorry, my understanding of the program, which they actually called Go Native, is that they worked with the residents to just increase their awareness and some education on the type of planting that they were providing and also just the amount of watering that was required for those plants. So there were certainly changes of business as usual with reducing the amount of watering and you know removing sprinklers and limiting the amount of mowing, et cetera of lawns, and so it was really just providing all of that education directly to the residents.

Cedar Blazek: Great. Jim, we have a couple of questions around the underground lake, which isn't surprising because I think that's a pretty unique aspects. Folks wanted to know if you're monitoring the temperature of the underground lake to ensure that the geothermal system is not changing the water temperature and what you're seeing there and then also if you want to talk a little bit about the permit process because that sounds like it might be challenging.

Jim Henry: Yeah. So I guess to preface this the underground in western Pennsylvania is a decommissioned limestone mine so all the permitting has been – it's been – it was active back in '20s and '30s, in the '40s it was called National Underground Storage, it was owned by a guy who was very concerned with Russia and with nuclear power and nuclear weapons, so he engaged folks about storing things underground. And then in the 1950s Iron Mountain bought it and turned it into a records center, which is what we're known for, and then the early, mid-2000s we turned some of it into a data center so the permitting is for the entire underground

through the PA Department of Deep Mine Safety. There's some EPA permitting as you can imagine because we have generators and we have all kinds of stuff, right, so any permitting around that stuff. Fire inspections are very interesting because there are things that you can do underground that you can't do above ground. MSHA is very involved in what we do down there even though it's not an active mine. So for example when we build something it's tough but we don't blast anything out. The way that it is right now is the way that it will say.

So that said for the data center part of it with the lake we have just as any data center would have a building management system, for the industrial folks on the call the SCADA system where we're looking at all the controls, we've got water sensors, flow meters, we've got basically meters on everything that you can imagine, thousands and thousands of set points and monitoring points, 1 of which is the temperature, 1 of which is the height or the depth of the water rather to ensure that we're not losing any, et cetera, and it all stays about the same. The lake stays at about 56-degree Fahrenheit give or take a degree and we have some other ancillary ways that we can control that water temperature. But what's wonderful about it is it's 200-feet underground and it's a natural part of the water table so we didn't create the lake; it was just there and we're utilizing it. So we have ways of controlling it if we need to but it's largely untouched.

Cedar Blazek: Great. I think that says a lot about using what's available to you and making sure that your efforts and strategies are location-specific and potentially thinking outside of the box. Thanks Jim. So I really like this next question and I think I'm going to have all the speakers answer it if you have anything; maybe you don't. What software tools would you highly recommend for aspiring Better Buildings Challenge organizations to become familiar with and why? Megan, any software tools that you might be able to recommend?

Megan Saunders: Not specifically but we do have a tool that we use internally to monitor all of the energy use across our entire portfolio and we are constantly looking at that. I mean that's really how we're measuring our success along a lot of our sustainability goals. But as I mentioned it really helps us to identify any issues in the portfolio and large opportunities for our energy conservation projects. So you know to the extent that you can get your metering aligned to be able to read the energy reads as frequently as possible, daily I would say at a minimum, I would say that's great and using appropriate software to do that.

Cedar Blazek: Jim, how about you? Any software to recommend?

Jim Henry: So we use a few different things. Obviously Portfolio Manager is critical to The Better Buildings Challenge so that's part of it, right, but as far as software to track what you're doing we use something called Schneider Electric's Resource Advisor App and it's a web app that we use to capture all of our billing activity, which makes it really easy for me when it's auditing time and you can actually track water use, you can - I mean pretty much anything to do with energy can be captured in Resource Advisor and broken down and graphed and there's trending. It's really fantastic and actually aside from that I mean in the industrial sector because I know a lot of folks that were sitting on this call were from the industrial side, having a really good SCADA system or BMS system that's tuned and has all the monitoring points whether that's something from Schneider Electric or it's something from ALC, having a good software for actually monitoring your data and then have a clean X board is really important. So between having a good BMS regardless of what the software is and having something that tracks your billing and whatever else you have like Schneider's Resource Advisor and maybe an API between the 2 is probably a best practice.

Cedar Blazek: Thanks Jim. Shelby anything to add?

Shelby Busó: No, I mean since we were encouraging other partners to use Portfolio Manager that was really our consistent tool across the board just because of its equitable accessibility.

Cedar Blazek: Great. Shelby, it should be a pretty simple question for you. Can the City of Atlanta fine buildings for having their lights remain on on a Sunday night presumably when no one's in the building?

Shelby Busó: No, the City of Atlanta does not have any ordinance that would allow for that.

Cedar Blazek: Okay. So we have about 5 minutes left and I do want to wrap up the session so there are still a few questions on here, I think we got some replies from some of our speakers, but if we didn't get to your question you're more than welcomed to reach out to us. So if you want to go to the next slide I wanted to highlight some additional resources from today's speakers. You can go see their partner profiles online that are a little bit more about the companies that were spoken about today as well as some of the resources that they've published. So it's another great way to learn and familiarize

yourself with our Solutions Center. Next slide.

I'd also like to highlight that after this virtual leadership symposium we do have a summer webinar series so these are more sessions free to attend, learn, get involved. They cover a wide variety of topics focused on energy, water, waste, reductions, you can see we have another data center call, building performance policies, sub-metering, program design, lots to learn, really wonderful speakers coming up so you can register on our website.

I gave you a little glimpse into our Better Buildings Solutions Center. The Better Buildings Solutions Center has over 2,800 resources to help you find proven and cost-effective energy and water efficiency solutions. Here a short video to help you learn more.

[Video plays, music only, 1:26:52 – 1:27:42]

Great. And with that on behalf of the entire Better Buildings team here at the US Department of Energy I'd like to thank all 3 of our panelists today very much for taking the time to be with us. I'd like to give a special shout out to Mike Powers who's been working behind the scenes to run the slides and manage this session for us and I'd really like to thank all of you for listening in. I hope you're able to join us for our closing plenary. We have 1 more session for The Better Buildings Summit and that starts in about half an hour so please join if you're able and if you'd like to learn any more about the resources discussed today please check out our Better Buildings Solutions Center or feel free to contact me or our program support at the email shown. Thanks so much everyone.

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