

Andrew Mitchell: Greetings, everyone. This is Andrew Mitchell with the US Department of Energy. I'd like to welcome everyone to the February edition of the Better Buildings webinar series. In this series, we profile the best practices of Better Buildings Challenge and Alliance partners and other organizations working to improve energy efficiency in buildings. Next slide, please.

Okay, quick overview and agenda. Today, we're going to focus on water efficiency and related energy savings, basically explaining how water efficiency relates to energy efficiency and to our Better Buildings partners. The commercial and industrial sectors account for more than 25 percent of the withdrawals from public water supplies, and many organizations within the sector have savings opportunities of 20 to 40 percent, so this is really a high-target opportunity and one that is going to become increasingly important in the coming years. The efficient use of water resources results in lower operating costs, more reliable water supply, and improved water quality.

Additionally, because energy is required to transport and treat water, it's important for those reasons also. Simply put, water is heavy, so moving it takes energy. Saving water also saves energy. This is especially true in flatter regions of the country, such as my native Chicago, where electric pumps are often required to move water when the topography isn't available to do so. So in addition to the energy issues surrounding water, many experts point to water as a scarce resource that could become a more urgent issue than, say, things like greenhouse gas emissions or climate change. That is certainly the case in the American West right now, especially in California. In any case, these concepts are all certainly related. So in light of these facts about water, we are privileged to have industry leaders from Better Buildings with us today to share how their organizations are addressing this important issue. Next slide.

Let me give you a little more detail about our presenters. First, we'll hear from Sean West, a Better Plants partner from United Technologies Corporation. That's UTC. For those that aren't familiar with UTC, they are one of the premier manufacturing and production companies in the world, and certainly the nation as well. They manage such iconic brands as Carrier Space Conditioning Systems, Pratt and Whitney airline engines, and many others. In November, UTC was recognized by the CDP – that's formerly known as the Carbon Disclosure Project – as a global leader for its actions and performance in response to climate change, with a position on the Climate A List. In an example of

that type of leadership in action, Sean will share UTC's comprehensive plan to address water efficiency in their most water-intensive plants.

Sean is a program manager for UTC based in Farmington, Connecticut in the environmental health and safety group, responsible for tracking energy, water, and greenhouse gas emissions. He also monitors progress towards corporate conservation goals. Sean works with UTC business units to identify and implement energy and water conservation opportunities. He has an engineering degree from Rochester Institute of Technology and a master's in business management from RPI.

After Sean, we'll hear from folks at Southface Energy Institute, who support Atlanta's phenomenal Better Buildings program, an all-star partner for those of us here at Department of Energy, and an excellent resource for similar organizations nationwide. First, we'll hear from Juliette Apicella. Juliette is the Southface program manager supporting the Atlanta Better Buildings Challenge. Led by the City of Atlanta, the ABBC has the highest participation in federal buildings – in the federal buildings – Better Buildings Challenge, with over 100 million square feet of commercial properties committed to reduce energy and water use by 20 percent by the year 2020 – no small feat. Juliette leads Southface's work in providing technical support to Atlanta BBC program participants and program data management, analysis, and evaluation services. She is a graduate of the Rhode Island School of Design, RISD, with a degree in interior architecture. She is a LEED accredited professional and serves as vice chair of the City of Decatur Environmental Sustainability Board.

Jean Pullen is the principal engineer for resource efficiency, commercial sustainability services at Southface Energy Institute in Atlanta. In this role, Jean provides technical leadership, strategic energy and water conservation planning, and greenhouse gas analysis. She joined Southface in 2013 after a long history of working with the organization as both a volunteer and consultant.

And finally, after Southface, we will hear from Maury Wolfe from IHG. InterContinental Hotels Group is a Better Buildings Challenge partner. Maury Wolfe is the director of corporate responsibility and environmental sustainability, and she is responsible for execution of the global environmental sustainability strategy across IHG's more than 4,500 hotel locations. These are spanning 11 brands that most of us have heard

of, including Crowne Plaza, Candlewood Suites, and all the Holiday Inn offerings. Maury's work includes management of IHG's Green Engage program, an online sustainability tool which gives our hotels – their hotels the means to measure, manage, and monitor energy, water, and waste. Maury also serves as the co-chair of the Global Business Travel Association Sustainability Committee.

We're delighted to have Maury and IHG give the perspective from the hospitality industry. Unlike some other efforts, hospitality efforts at water conservation are often more high profile. They're things that we can see, for instance, the common option in hotels to reuse towels during our stay. However, IHG has gone far beyond that, to create a more sophisticated approach that works in a challenging incentive scenario that balances the needs of management companies, franchisees, and hotel guests, so again, no small feat there. IHG will be highlighting their internal platform for helping their hotels address water use as well as specific projects in drought-affected areas that are turning out to be blueprints for water reduction across their portfolio, again becoming more and more important. So thanks to all of our presenters for being with us here today, and we look forward to hearing from you.

On the next slide, before we get started with our presentation, I wanna remind our audiences that we will hold questions until near the end of the hour, so please do send in your questions as they occur to you. The chat box on the right side of your screen is our tool for that, and we'll try to get to as many of them as we can toward the end of the hour, but from a logistics standpoint, it's easier to handle them if they come in ongoing rather than in a peak demand situation at the end. Peak demand is a little bit of grid reliability humor for all of the grid geeks out there. This session will be archived and posted to the web for your reference, so if we're moving too fast through any of the slides, you can always reflect on them later. So with that, let's start off. Let's first hear from Sean at UTC. Sean, what is UTC doing to embed water efficiency best practices across your many facilities? Take it away.

Sean West:

Thank you, Andy. Thanks for that introduction. We can go right past this slide, 'cause Andy already did the introduction, so just another word about United Technologies and the four business units that we have within the company that add up to a \$56 billion company – worldwide manufacturer, two commercial building companies – Carrier Environment Security and Otis Elevator, and then the two aerospace companies – Pratt and Whitney jet engines

and UTC Aerospace Systems, that manufactures a number of parts that go on commercial and military aircraft. You can go to the next slide.

UTC has manufacturing operations around the world, so I just wanted to give you a picture of where they are, and this'll become a little more important later on, as we talk about local water supplies around the world and the scarcity levels in those facilities, so we won't spend any more time on this. We can start talking about the programs, so one of our sustainability goals – we have a complete family of sustainability goals. One of the important ones is water use, and we've just released the 2020 water reduction goal of 25 percent absolute reduction in water use, compared to the 2015 baseline. This new goal starts after many years of water conservation initiatives. We just completed the 2015 water reduction goal, and we were successful in exceeding the goal, and we hit a 34 percent reduction over a 2006 baseline, so that's an absolute water reduction of 235 million gallons over the last 9 years.

So it was a big effort. All of our sites contributed to that, and we're continuing for the next five years with another absolute water reduction, so that's five percent per year for the next five years, and our reporting sites defined by UTC is all manufacturing sites have to participate in this water reduction target, and all nonmanufacturing sites – corporate offices, data centers, facilities like that, that have an energy and water spend of over \$100,000.00 a year. It's deemed that those sites are big enough that they should take control of their energy and water use in those buildings. So like I said, we're gonna use 2015 as the baseline for the 2020 goal, and it's an absolute reduction. Now, I won't spend any time talking about it, but this goes hand in hand with our greenhouse gas reduction target. We just completed the 2015 program. We had a 32 percent absolute reduction in greenhouse gas emissions. That's our 2015 result, and we're gonna continue with 2020 goals for another 15 percent in greenhouse gas emissions, so that's 3 percent per year for the next 5 years. You can go to the next slide, please.

So part two of the water reduction strategy at United Technologies – first is the absolute water reduction, and part two is the implementation of water management best practices, so simply stated, the goal is for 100 percent of our sites to evaluate and implement a series of best practices. We'll talk about how many they have to implement, and that varies around the world, but we're gonna tally up the number of water management best practices for all of our sites, to evaluate and implement where practical. And

there's a target to hit 20 percent of those project each year for the next 5 years, so by the time 2020 gets here, we will have implemented 100 percent of the water management best practices, and we'll talk a little bit more about what those are. You can go to the next slide, please.

So as I mentioned earlier when we were looking at the map of the world, the location and the water scarcity level for each of those sites becomes important, because we've built a little implementation matrix here. It's a little hard to read, but it really takes into consideration the size of the facility with respect to how much water is used on an annual basis, and the water scarcity level, as determined by the World Business Council for Sustainable Development. And what we've done, we've built this little matrix to say if you're a small site, less than 1 million gallons per year of water use, and you're in a part of the world that has an abundant or sufficient water supply, you're in that green quadrant in the matrix. And that means that you only have two water management best practices that you're required to implement, and we've defined what those two are. We figured they're very important, and they eliminate waste. Those two required best practices for everyone are to complete a water balance, so you know how much water you're using and where you're using it within your facility, and to do a leak management program, to make sure it's just not being wasted, leaking out in the pipes in manufacturing processes, so that's the minimum requirement for any of our reporting sites.

Now, if you're in one of the blue quadrants, meaning you're a small site in a region of the world that is stressed with respect to water supply, you have to do those two required best practices plus five others from this list, so that's a total of seven water management best practices, so that's a small sites in stressed areas or a large site greater than 1 million gallons per year in an abundant or sufficient region. You also have to implement seven of those water management best practices. And then if you're a large site in a stressed area, either stressed, scarce, or extremely scarce, you're required to look at all 10 of these best practices, and we'll take a look at the list in a little more detail in a minute, to do the maximum amount, because you're in one of those stressed areas. There is an exception process if one of those best practices just is not practical for you to implement because of cost or technology. You'll have to work through the EH and S professionals at your site to get an exception for implementation of that best practice. So you can go to the next slide, please.

Then we built a tracking system, first to be able to determine where are we in that journey of 20 percent of the best practices implemented each year to get to 2020. Within our environmental reporting system, we built a water management best practices tracking system, so you can see the 10 best practices listed here on the side, everything from cooling tower management to installing flowmeters, installing low-flow fixtures, these 10 best practices that we've determined over many years of implementing water conservation programs. But these are the common-sense factors that have the biggest bang for the buck, so each of the sites on a quarterly basis will have to update the status of their implementation of these.

Now, the tracking system will already know whether you're in one of those green areas, the blue area, or red area, so it will count up how many best practices you're required to implement, and then you just have to update as the site EH and S professional whether you've completed that project or you haven't started it yet, whether you're greater than 50 percent implemented or less than 50 percent implemented. So that gives us an accurate count of how many projects around the world do we have implemented, so if on average, we have 400 sites around the world, and if each of 'em have to implement 5 water management best practices, we've got 2,000 projects we have to implement over the next 5 years, so that's how we'll keep track of are we on target or not – 20 percent, 40 percent, 60 percent year after year, so we're gonna count the total and then evaluate how many are listed as complete by the site EH and S managers. Next slide, please.

So the water scarcity level that helped us build that implementation chart – the five levels of water scarcity as determined by the WBCSD, the World Business Council for Sustainable Development. They classify them as abundant water supply, sufficient water supply, stressed, scarce, or extremely scarce, and the metric there is cubic meters of water supply per person per year, and it ranges from less than 500 cubic meters to greater than 4,000 cubic meters. So this is a tool that we've been using for years, that we implement the demographic information or the location information for every one of our sites, and it builds a table for us to tell us, "You have 39 sites in extremely scarce regions. You have 192 sites in an abundant region," so we can build that picture and then determine for each one of those sites how many best practices they have to implement.

And we see a picture of that on the next slide. This is an example. This isn't actually UTC's profile, but we've been keeping track of

how much water we use and how many sites we have in each region – abundant, sufficient, stressed – over the last few years, so I didn't leave the graphics on here. I cleaned it up a little bit. That's actually 2013 in the red, 2014 in the blue, 2015 in the green, and that moves each year because of acquisitions or divestitures, so again, we keep track of water use and the number of sites in each of the regions, and that water tool in this example gives us the maps. We can see here a map of the United States, Mexico, Central America, and also Europe, Africa. We can see the red, yellow, green areas for the different water scarcity levels around the world. This is a tool that we use to determine how many sites we have in each of those regions. You can go to the next slide.

And once we determine how many sites we have in each of those water scarcity levels, we develop this water management best practices guide for UTC sites. It's a brief description and the minimum expectations for each of the 10 things that we talked about before – cooling tower management, leak management, flowmeters. Here's a brief description of what that technology is and what the minimum expectation is for you to consider yourself completely implemented this best practice at your site, and these things will be reviewed when we do insurance reviews, and the EH and S professionals will explain the data in the tracking system, how they implemented these, so that's our water management best practices guide that we have distributed to each of our site EH and S managers.

And in the last slide, it shows the history of where we've been since 1997. We have been tracking water consumption at our sites since the early 1990s, and keeping track of it here since 1997. As you can see, we were in the neighborhood of 4 billion and over 4 billion gallons of water used in 1998, and how that's tracked up until 2015, all the time while the company's been growing. So we've been successfully reducing our absolute water consumption while we've basically tripled the size of the company, going from a \$20 billion company to a \$60 billion company, so it can be done. You can do both at the same time, implement water conservation and still grow the company. Now, I don't consider UTC to be a large water user. We're now in the neighborhood of less than 2 billion gallons of water per year, 400 sites, so that breaks down to a pretty small number on how many millions of gallons of water per year, per site, so I wouldn't consider us a large water user, but it still pays to be a prudent user and a wise user and make sure we don't waste any of that natural resource. So I thank you for your attention, and these slides, like Andy said, will be available to everyone else, and we'll answer questions as we go. Thank you.

Andrew Mitchell: Yeah, great. Thanks, Sean, and I think your point about it can be done, you can increase sales and reduce absolute water use, holds true even if – maybe you were being a little humble there, saying UTC is not a big water user compared to a lot of operations – it is. I also think it's really interesting, the way that UTC approaches kind of a triaged look at where to focus resources, namely time, energy, money, people, on water, because of course, water scarcity is not created equal. Depending on where you are in the country, or in the case of UTC, in the world, it can be a lot higher priority, so a very good practical approach to that and the 10 measures to approach, so thanks again, Sean. Now, we will hear from the duo at Southface Energy Institute. Our cities have a unique opportunity to impact water use in individual buildings, but also at a system level through their water treatment plants and other municipal facilities. We will hear about both of those today. Juliette Apicella will start us off with some highlights of water reduction projects in the Better Buildings Challenge portfolio. Juliette, take it away.

Juliette Apicella: Thanks. I'm gonna give a brief overview on the Atlanta Better Buildings Challenge. The program was launched in 2011, and it's a public/private partnership, led by the City of Atlanta Office of Sustainability. The goal of the challenge is to reduce energy and water consumption in Atlanta's commercial buildings by 20 percent by 2020, and Atlanta adopted the water reduction goal at the onset of the program, so the city and the participants have had several years to gear up and to see excellent results in terms of water conservation. So in 2014, the program reduced energy use intensity by 11 percent, saving 1.97 trillion BTUs, and reduced water consumption by 20 percent, saving 163 million gallons of water, and reduced CO2 emissions by over 100,000 metric tons. A key factor of the success of the program can be attributed to Mayor Kasim Reed's leadership. The ABBC maintains – or remains a top priority in fulfilling his vision of making Atlanta a top-10 sustainable city. The ABBC is making measurable impacts on Atlanta's energy and water use while supporting the local economy and building the clean energy industry. In 2014 – oh, I'm sorry. Next slide, please.

In 2014, the water savings average annual percent improvement was 4.68 percent, so you can compare that to a 2 percent increase, which is the goal that we would need to achieve on an annual basis in order to achieve our 20 percent savings goal over a 10-year period, so you can see the progression of water saving success for the program since its baseline year, which is 2009. Next slide, please. In 2014, 45.2 million square feet of properties had clean

water data. Of those, 48 properties had already exceeded their 20 percent water savings goal, so roughly about half of the participants in the program had clean water data, so we're working to get a higher incidence of clean data in the program and a higher incidence of reporting. Next slide, please.

So water efficiency and conservation measures that are being implemented by participants in the program include AC condensate capture for cooling tower makeup water; rainwater harvesting; high-performance toilets, urinals, and faucets; cooling tower upgrades; domestic hot water equipment and fixture upgrades; irrigation optimization; xerascaping, leak repair and detection; and swimming pool blankets. Next slide, please.

The Bank of America Plaza is the tallest commercial building in the Southeast, and the 10th tallest building in the US. The 55-story tower, totaling over 1.49 million square feet, joined the Atlanta Better Buildings Challenge in 2012. The commitment to join the ABBC supported the LEED process being pursued by the owner and the property management team. In 2015, the building celebrated receiving LEED silver certification for operations and maintenance. In 2014, the building had achieved 47 percent water savings, which is incredible, and just through looking at their data through 2015, their savings have just continued at a really phenomenal rate, and we're looking forward to see how they finish out 2015 as soon as we get the rest of their data.

The investment to upgrade and replace building restroom fixtures had already paid for itself within the first year. They had saved over 5 million gallons of water and an estimated savings of \$269,000.00 in annual cost savings, which is really impressive. A condensate capture system installed to supply makeup water to the cooling tower is projected to save an additional 15 percent, and they also upgraded the existing irrigation system to include soil moisture monitoring, along with more efficient spray heads, resulting in a 64 percent less water use than a conventional system. So now, I'm gonna turn it over to Jean Pullen, who's going to present how water savings in the community, in conjunction with water treatment plant efficiency improvements, synergistically reduce energy use from water treatment and conveyance.

Jean Pullen:

Thank you, Juliette. Next slide. Per capita water use in the City of Atlanta declined 21 percent from 2000 to 2010. The Atlanta Better Buildings Challenge is a major catalyst and driver toward an additional 20 percent savings target by 2020. Next slide. This chart shows that 36 percent of all energy used in City of Atlanta

municipal operations is for water treatment and conveyance. Using funding from the American Recovery and Reinvestment Act, the Office of Sustainability capitalized a revolving loan fund with \$3 million to provide funding for projects with simple payback periods of five years or less. Funding was first deployed on high-impact, shovel-ready lighting projects in the city's water treatment operations. Next slide.

The Hemphill water treatment plant operates 24/7 and has a maximum capacity of 137 million gallons per day. The Hemphill plant is one of three drinking water treatment plants in the city's system that provides potable water for the City of Atlanta and parts of Fulton County. Next slide. In the summer of 2011, the City of Atlanta completed the construction and commissioning of a finished water pumping station that replaced a pumping station that was built in the 1880s and was powered by steam boilers installed in the 1940s. The finished water pumping station includes eight new electric pumps, half of which are equipped with variable frequency drives that reduce system pumping power over the full range of operating loads. This project has resulted in total plant source energy savings of over 36 percent and has reduced annual operating costs by over \$1.2 million. Next slide.

The city also used revolving loan funds to replace obsolete lighting in the city water distribution tunnels. Where practical, bi-level lighting was used. When workers are present, light levels are adequate for the task, but when no one is present, the fixture power reduces to 25 percent when the spaces are unoccupied, resulting in 78 percent overall lighting energy savings in the distribution tunnels. Next slide. Further, outdoor lighting was converted all to LED, reducing lighting power from 82 to 86 percent, while improving color rendering and security that are important for water treatment operations. Additionally, full cutoff fixtures reduced lighting pollution. Next slide.

Long burn hours, of course, in water treatment operations provided quick return on investment in efficiency. Next slide. The lighting projects in three of the cities' treatment plants saved enough energy to power 270 single-family homes. Next slide. The city's Hemphill water treatment plant far exceeded the 20 percent savings target of the Atlanta Better Buildings Challenge. The plant also placed in the top one percent nationally in the EPA's 2012 National Building Competition. Next slide.

The RM Clayton Water Reclamation Center is the city's largest water reclamation plant. Digester gas that was previously flared is

being recovered to generate up to 1.6 megawatts of renewable electricity in a combined heat and power plant. It is noteworthy that this is equivalent to the annual output of a nine-megawatt solar array. Engine and exhaust energy are returned to the water treatment process. Potential energy savings are equivalent to that used by 1,000 homes. Next slide. The RM Clayton combined heat and power project was named project of the year by the Georgia chapter of the American Society of Civil Engineers.

Because Hemphill produces about 57 percent of the city's drinking water, efficiency upgrades in the plant have had a significant impact on system-wide energy use, reducing energies from drinking water treatment operations department wide by 16 percent. Both source and site energy are monitored, and the metrics are in terms of BTUs per gallon. Next slide. Energy use in water reclamation over this period has remained very flat. We experienced a flood in 2009 that required everyone's attention for the few years following. Next slide.

In closing, the Atlanta Better Buildings Challenge has resulted in community water savings of 163 million gallons per year. These water savings, in conjunction with water treatment plant efficiency upgrades, have resulted in significant energy savings. Thank you for the opportunity to share information on the city's efforts to reduce water use as well as energy use in water treatment operations. These improvements synergistically have a significant impact on energy use in water treatment and conveyance. Thank you.

Andrew Mitchell:

Thanks a lot, Jean and Juliette. That is really impressive numbers there, both on water saved and source BTU tracked and saved. That's very impressive, and also, especially considering – you mentioned the flood in 2009. Atlanta is also no stranger to drought too. I remember seeing pictures of the big Lake Lanier outside the city, with the boats down, sitting on the bottom, some of those lean years, so if Atlanta can do it, certainly other cities can also. A quick reminder to everyone on the webinar to send in any questions you may have through the webinar chat box on the screen on the right side. We're collecting those for the Q and A at the end of the session. Okay, well, finally, let's head to Maury Wolfe. She is also based in Atlanta, but with BBC partner, InterContinental Hotels Group, IHG, as I mentioned. Maury's gonna tell us about the Green Engage platform and also about the regional water efficiency work IHG has done and how IHG plans to use these learnings for broader impact across your hotel portfolio. Maury, take it away.

Maury Wolfe:

Thank you so much, so if we can go on to the next slide. So just to set the stage a little bit, IHG is one of the leading hotel companies in terms of size. We've actually just now surpassed 5,000 hotels and cover nearly 100 countries. You'll see our brand bar at the bottom, and what I think is important to call out for the purposes of this conversation is the wide span of different types of brands and operational models that we have across the portfolio, so you have everything from a high-end luxury hotel, with our flagship InterContinental, through the entire Holiday Inn family. We have boutique brands, and then of course we have the extended-stay brands, and each of these operates a bit differently, so when we think about sustainability, we have to think about how we can scale an approach across a lot of different business styles, so if we go to the next slide.

So when IHG thinks about it from a top-down approach, we think about our responsible business ambition, which is to create more sustainable communities and better lives, and we do that through what we consider our environmental sustainability agenda and through our Sustainable Communities program. So we have three core programs, and we'll talk about IHG Green Engage, which is our environmental one, but when we look across our programs and our expected outcomes, they're all leading up to our public-facing targets, so we have five key targets around sustainability, all with a 2012 baseline.

And when it comes to water, it's a bit nuanced. We want to reduce water per occupied room by 12 percent, but specifically in water-stressed areas, so we're really trying to adapt our learning and our approach to make sure we're pursuing water sustainability where it will have the greatest impact, and understanding that localized issue. And what we like to think is that sustainability and responsible business is being built into the DNA of IHG across all of our properties and all of our operations. It's important to know that IHG is really a franchisor. So across all of our properties, we own in the single digits, just a handful of those 5,000, and then we manage about 5 percent, so predominantly, we're looking at a franchise estate of owner/operators who own one or two properties. So it's a lot of individual small business owners who are really key parts of their community, and that's why environmental and community responsibility can really resonate with them. If we go to the next slide, thank you.

So IHG Green Engage is our environmental platform, and it does a couple of things. It's a web-based portal that was built by IHG

specifically for our hotels, so its end user is a hotel general manager, so the tool is built to do a couple of things for the property. It enables our property to track their energy, their water, their waste footprint and converts all of the inputs into their carbon footprint, so that they know how they're doing across an environmental journey. It compares these with the associated costs so they understand the business impacts, and then it also compares their performance against a benchmark of comparable IHG properties, so that they know how they're doing compared to a similar property in a similar climate zone. This is, of course, helpful for that nice, healthy, friendly competition. It allows them to set annual targets in each of their environmental impact areas, and it allows them then to have over 200 – what we call green solutions to help them pursue improvements across their environmental agenda. So when they're setting their carbon targets or their water targets for the year, it recommends the solutions that would be appropriate for them.

We're really excited about a couple of new initiatives. Our B-to-B customers, so our business-to-business customers, have started asking sustainability questions when finding out about our business, so when they're doing their RFPs and asking for pricing of hotels and locations and other amenities, they're also starting to ask about the carbon footprint and the water footprint of the hotel, so this is really helping us expand the business proposition for sustainability. The other thing that we're really excited about is that, because IHG so much believes that responsible business should be part of everything we do, last year, we announced that participation in Green Engage would be a brand standard for all properties, so they now all have to participate to a minimum level of activity in the tool. They have to complete 10 easy, getting-started, quick-win green solutions, and they have to track all their data on a monthly basis, and so we've seen a huge uptick in engagement as hotels really start to see the return on investment from participation.

Well, with all of this, the question then becomes – we can see the data down there at the bottom about how the properties are progressing towards those 2017 targets around carbon and water, but the question becomes how does this come to life in the real world when we're faced with a challenge? So if we can go to the next slide, please. I think we all know that California has been facing a very serious drought for the last couple of years, and we really received a call to action from our operators in California, reaching out, saying, "We know we have Green Engage. We know we've been making progress around environmental sustainability,

but what more can we do? How can we really activate to make sure we're responding effectively to the drought?" We know this is not just an issue for IHG. It's an issue for business. It's an issue for all Californians, to figure out how it's gonna impact their day-to-day lives, so we wanted to take a proactive approach. If we go to the next slide...

So we did a couple of things, and I'll talk about them in detail, but as an overview, we started by taking a broad approach, sending water-saving toolkits – and I'll go through how – what was included there – to each of our properties in California. We've got 230-plus properties across the state, so we've got a pretty significant footprint, so we sent water-saving toolkits. Then we looked at our supply chain and found a partner in HD Supply, who was able to map out rebates that were available for new water-saving technologies across the state, and they were able to negotiate improved pricing where rebates weren't available, so that we could start looking at how our hotels could activate and implement new water-saving fixtures. And then we partnered with the California Conservation Corps, and I'll talk a little bit about more – a little more about what that looked like in a minute, so if we scroll to the next slide, please.

So the water-saving toolkits – and here's actually a picture of one – in each toolkit, we included 12 sink aerators that every property could implement right on the spot. Over 90 percent of our properties installed the aerators, and then I think close to 100 purchased enough aerators to outfit the rest of their properties, but just with the toolkits themselves, we have an estimated savings of over 7 million gallons of water annually. And we know that sending aerators is not the end all, be all solution to the drought in California, but it was about getting our properties started, helping them understand some of those really easy wins that are not gonna impact the guest experience, and are gonna provide some quick water savings.

Additionally in this toolkit, we provided them guidance on where all the rebates are available, how they could leverage our relationship with HD Supply, and in response to new regulation from the governor, how they could better communicate about towel and linen reuse programs at their property. There's a lot of mixed feelings from guests around whether or not you wanna bypass housekeeping and save your towel. The governor made it a mandate that all properties have to at least offer this program to their guests, so we wanted to provide really great resources for

how the hotel could communicate this easily, so our guests could participate. If we go to the next slide, please.

The next thing we did was partner with the California Conservation Corps, because as I mentioned, we've got properties of all different sizes, and many of our properties don't have a full-time director of engineering on staff, and if they do, our resources are stretched very thin in just the day-to-day operations of the hotel. But they were interested in helping support conservation efforts, and they were interested in helping take advantage of all of those rebates, so that they could update all of their bathrooms and really find some of those water savings. So the California Conservation Corps came together with us and underwent training, so that their staff and their teams could provide the man hours and the skill to come and actually do the bathroom retrofits for our properties.

So we really developed a great partnership, where HD Supply helped us find and store some new products at reduced rates and using the rebates available through different municipalities, and our hotels were able to partner with the California Conservation Corps to utilize their staff time and their hours to do the actual legwork installing all of the new fixtures, so so far, we've taken six properties through this partnership and through this pilot. They've gone through full bathroom renovations, and we're looking at about 2 1/2 million gallons of water saved across those properties. Some really interesting learnings were also around how we can help make sure that the products that are leaving the property are then recycled, so you'll see some bullets at the top around – having to do with all of the toilets. If we'll move on to the next slide...

In the interest of time, that's just a deep dive on one of the properties, the Holiday Inn Diamond Bar, so I'll leave that with you. It was our first – the first pilot property, but one of the things I do wanna call out is that typically in hospitality, you really worry about when you're doing any kind of renovations of a space, it can negatively impact the guest experience. And for all of us who've ever checked into a hotel and seen a giant "Pardon our dust" sign, I think we've all worried that we'd be the hotel – we'd be in the room right next to some sort of renovation taking place. What was very unique about this is that the property put up those similar signs, but explained that they were doing a renovation to try and address water conservation, and had guest after guest coming up to the general manager thanking them for being so proactive, so we also had a lot of great learnings about how much the community was

responding to proactive efforts by business. Please go to the next slide.

And this is just a snapshot of what some of our competitors are doing, and this is not for the sake of comparison. I think the important thing to understand here is that the hospitality sector is really – we're all learning about water, and we've all recognized that this is an important place for us to activate, but we've all been doing it in a bit of a different way. So we've actually come together with the International Tourism partnership to come up with a unified way to calculate our water footprint, to measure it, and to report it to our guests and to our customers. So while the current landscape seems like we're all taking slightly different approaches, I think it's a great testament to the industry that we're coming together to try and have a unified approach to water, so that work is called the Hotel Water Measurement Initiative. And another offshoot of that is that we are also working in collaboration to come up with industry targets around what would make sense for our industry as a whole to do collaboratively.

And then the next slide is just a bit about what we know now about water that we haven't before, so our work in California combined with the metrics that we now have in Green Engage has really opened our eyes and has allowed us to understand some more about where we have our biggest water impacts. We know now what a guest typically uses on average. We're also able to see where our consumption takes place in terms of water stress or in terms of the type of property, so all of this comes together to allow us to set a new strategy moving forward that we'll be excited about. And with that, I think I'll hand it back over for questions.

Andrew Mitchell: Great. Thanks a lot, Maury. I appreciate that information. Also, I really like the – the reality of the situation is that you point out that ultimately, the guest experience can't suffer, or the conservation measures won't matter. That's a really important thing to keep in mind for all our hospitality partners, and appreciate your honest on it. Also liked the approach to partnering with the California Conservation Corps for that specific situation, obviously high-profile drought in California, and I don't know. This is just sort of a guess, but it seems like there were existing resources available, and there was no need for IHG to reinvent a water conservation program. Can you comment at all about how you started that partnership with California Conservation Corps?

Maury Wolfe: Yeah, so it actually came about in two ways. When we were first pulling together all the pieces for the water toolkit, we also wanted

to make sure we were educating our properties on what regulations were gonna come, so we wanted to be proactive, but we knew the governor would also probably put some regulations in place. So when we were reaching out to both the governor, but also local jurisdictions, we found out that the California Conservation Corps had been given funding if they could go and help businesses respond to the drought. So through our public affairs channels, they really were able to highlight that there was this opportunity for the CCC to come in and help businesses where they had a skillset that we might need. The other way we found out about it is actually one of our vice presidents of operations in California, he actually grew up and was a volunteer with the California Conservation Corps in his earlier days. So we actually had a local connection as well, so it's funny how you get sort of a grass-roots and a top-down, meet in the middle to make a partnership really strong.

Andrew Mitchell: Yeah, that's a really great example of that, and definitely good to have local talent to draw on. Got another question for you, Maury, as long as you're on the hot seat here, related to how you decide where to focus. I guess California was – again, it was high profile. It seemed like a sensible thing to do, but is IHG able to justify investing funds in water efficiency measures in areas with lower water sewer rates, that might not have a clear payback?

Maury Wolfe: Well, that one's always going to be a challenge for any company, but I think it's a unique challenge for us because we're not the owner of the property, so when we talk to our properties, we're asking them to invest their funds, so they really need to see the return on investment. One of the easier ones we've had explaining the return on investment of sustainability as a whole is that energy is typically the number-two line item on a hotel P and L. You have staff cost, and then you have energy. Water tends to fall a bit lower in terms of just the direct return on investment, but I think what our properties are starting to learn is that even if it doesn't have the highest payback, because it's such a localized issue, and because our operators are – can be really big pillars – a hotel can be a big pillar of the local business community, so they're starting to really understand that connection. It may not have the typical financial payback, but it certainly has a reputation and community engagement payback, so more and more are starting to see the value, regardless of the direct ROI.

Andrew Mitchell: Yeah, I think that's a really good point. People go and visit other cities, states, whatever, and they stay at a hotel, and that hotel might have a pretty significant impact on their perception of that

location. That's a good point about the role of hospitality. Kendall, let's click forward a couple –

[Crosstalk]

Andrew Mitchell: Oh, go ahead.

Maury Wolfe: I was just gonna say I think maybe the folks from Southface might also have a perspective on the financial implications for Atlanta specifically.

Andrew Mitchell: Yeah, definitely. Let's go one more slide forward. I just wanna point out that the bottom of this slide, InterContinental Hotels Group, we have links here. When we send this deck out afterwards and make it public, those links will be live, and it goes to the implementation model, more info on the Green Engage program that Maury described, and that would certainly also address issues of what to prioritize and when and how you all went about doing that. But yes, let us go back to Jean and Juliette and ask you, maybe to get your take on that same question that Maury had – how do you prioritize where to direct funding when it's limited?

Juliette Apicella: When it's limited? Well, I think depending on –

[Crosstalk]

Andrew Mitchell: – it's always limited, right?

Juliette Apicella: Right. Well, looking at budgets, you're gonna put it to where – the piece that you're gonna get the most impact with, so that –

Andrew Mitchell: Yeah, and another question we got: Is there information on the payback period or ROI for the projects with the wastewater treatment plants?

Jean Pullen: Right. It was a \$7.5 million project, and it was projected to have a million dollars in savings, annual savings, and there was another question I saw about the funding for it, and it was funded by the state, through the Clean Water State Revolving fund, with a 3 percent, 20 year loan.

Andrew Mitchell: And at \$1 million savings per year, that should be pretty attainable.

Jean Pullen: Right.

- Andrew Mitchell:* Another question: Did Atlanta consider using an energy savings performance contract, an ESPC, for this project or any of the improvements?
- Juliette Apicella:* The answer to that is yes, if you're speaking about the city, and then certain participants in the program have secured contracts with ESCOs as well.
- Andrew Mitchell:* Mm-hmm, got it. But it sounds like there were a number of options for you – the state revolving funds. You mentioned ARA funds, and then ESPC would be another option. What about local utility rebates? Did that come into play at all?
- Jean Pullen:* Not on these projects, no. The rate that the water treatment plants were under didn't – was not eligible for rebate funding.
- Andrew Mitchell:* Got it. That's common, considering the loads they have, and actually, water treatment plants often have inverse peak loads because they peak out during rainstorms, when most people are blasting their air conditioners, but that's another story. Sean, we got a couple questions for you. In particular, you showed a couple screenshots of the water tracking system that UTC uses. Can you tell us more about the program that you use for project tracking?
- Sean West:* Sure.
- Andrew Mitchell:* Was it something you developed in house? If so, how long did it take, and what is the process for project tracking or reporting like at a local level, and what's the interface like for the users?
- Sean West:* Okay. There were a couple screenshots that I showed. One of 'em was the water tool from WBCSD. That's a tool that is free and available to the public from WBCSD, and that's the one that helped us understand our profile, how many sites we had in scarce areas, so that's the screenshot they're talking about. That's available online from the World Business Council for Sustainable Development. The other ones that we use to track all of our environmental data and our project tracking that list the 10 best practices, where we keep track of that, that's something that was developed in house.
- And actually, it's ongoing and has – we have an in-house IT staff that work on that year after year after year, so it – we're really – we've recustomized it for the 2020 goals, so all during 2015, we've been evaluating what are the new goals gonna like? Is there any different reporting and data that we have to track? So probably

mid-2015, we established the list of the 10 best practices, so since then, the IT department has been working on customizing the reporting system to have it ready for the first quarter of 2016. So it probably took six months to develop in house, but they have a number of other tasks they're working on, because like I said, this is the EH and S department data collection system, so they're tracking safety data, energy data, water data, so there's a lot of things. And we're very, very fortunate to have an in-house staff to do that, 'cause if we had to do it with a third party, that customization would be a challenge on cost and schedule.

Andrew Mitchell: Certainly. Well, thank you for that. One other question along the same lines as the others: What information can you share on the cost and return on investment of the water efficiency efforts, and how does UTC track and account for the savings, or in other words, if you save \$50,000.00 or \$100,000.00 annually, does that money get reallocated or – and I know this is – sometimes we tread into proprietary information, so you can answer however you choose.

Sean West: Every company has that challenge, and it's the same project tracking module where we keep track of every – when the sites implement a project, whether it's energy or waste or water, they put the vital details in the project tracking module. It's a web-based system that sites have access through, and we collect it at the corporate office, and they're required to put in their total investment, cost savings, units of energy or water saved from that project. And unfortunately, I think we could all agree that water supply is seriously undervalued, so it's very cheap, and it's a big challenge to get a reasonable payback for some of these water conservation projects, so it's nothing like the energy projects that we keep track of as well. So the data is really sketchy on some of that, 'cause a lot of these projects don't get implemented because there's a payback. Many of 'em have a long payback, greater than 10 years, but there's a water conservation goal, so the sites make those decisions, and as they remodel buildings, upgrade manufacturing processes, they include these water conservation initiatives in those projects. So no, it's not –

Andrew Mitchell: Got it. Yeah, it's funny –

[Crosstalk]

Sean West: I don't really have definitive numbers to say, "This water project cost this much," because it was part of a bigger restructuring initiative.

Andrew Mitchell: Got it, and that is a challenge in all these projects. Well, thank you for the info, in any case. Let's go to the next slide. We are at the top of the hour here, so I'm just gonna wrap up. I have a few more announcements before we call it a day. We hope you'll plan to attend the next Better Buildings webinar. It is titled Valuing Energy Efficiency, and it'll take place just about a month from today, on Tuesday, March 1st, from 3:00 to 4:00 PM. Join us for this webinar focusing on energy efficiency and sustainability in the appraisal and valuation industries. John Scott from Colliers International will explain how they have adapted their process to ensure they realize the full value of energy efficiency and sustainability upgrades. Davesh Nermul at Inspired will discuss various techniques and data challenges that might be encountered during the evaluation process, and Betty Wright from – Betty Wright Chappell at Sustainable Values will provide an introduction and overview to the recently-launched Energy Matters training course that teaches appraisers how to incorporate energy and sustainability metrics, so that's coming up a month from today. Please do join us. Next slide.

I can never resist inviting everyone to join us at our Better Buildings summit, early May 2016 here in Washington, DC. We will have many topics very similar to the ones we just discussed today, including some on water. We will have speakers from IHG, and hopefully UTC and Atlanta will be in attendance. With that, I'd like to thank our panelists very much for taking the time to be with us today. Feel free to contact our presenters directly. You can see their e-mails there. If we weren't able to get to your question during the Q-and-A period, apologies for that. Please do reach out. If you'd like to learn more about the Better Buildings Challenge or Alliance, please check out our website, or feel free to contact me directly at the e-mail shown there. I encourage everyone to follow the Better Buildings Initiative on Twitter for all the latest. You will receive an e-mail notice when the archive of this session is available online. Thank you, everyone, and have a great week.

Sean West: Thank you, Andy.

[End of Audio]