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Andre de Fontaine: Hello. I'm Andre de Fontaine with the US Department of Energy's Better Buildings Initiative. I'd like to welcome you to the March edition of the Better Buildings Webinar series. In this series, we profile the best practice of better buildings challenge and alliance partners and other organizations working to improve energy and water efficiency in buildings. Today, we're gonna zero in on water efficiency with a special focus on publically available tools and resources that can help building owners and operations save water.

We'll hear first from Saralyn Bunch from DOE's Federal Energy Management program who will share resources her office has developed on important topics like water management planning, new water efficient technologies and strategies to access alternative sources of water. We'll then turn it over to Tara O'Hare with EPA's water sense program who will present some great resources EPA has developed including simple to use checklist and worksheets, best management practice guides, and calculation tools. And then we'll close with a Q&A sessions at the end. Next slide please.

Before we jump into all that, let me first provide a little bit of background on the work that Better Buildings has done to date on water savings. We started with working with partners to set water goals back in 2015. This was really driven by input and interest from our partners. The benefits of saving water is very clear. Since the production and distribution of clean water is a water energy intensive process, every gallon of water you don't use usually translates directly into energy savings. And saving water also of course reduces water build, improve resiliency and allows organizations to demonstrate environmental leadership. Next slide please.

Today, more than 40 partners are working with us to set water goals. Usually around 20 percent over ten years, which is generally in line with their energy goals. And we've seen some really great results so far. Already six partners have met their goals and that includes Cumin, the city of Atlanta, Cudre School District, United Technologies Corporation, Staples, and General Motors. Importantly, these partners are also sharing the solutions that work for them, focusing on some of the most significant barriers to saving water like making the business case for water efficiency and tracking and managing water data.

So we've made a lot of progress but at the same time, we often field inquiries from partners that are looking for more information on available tools and resources that can help them take their water savings programs to the next level. And that's why I'm so excited about this webinar because we have two terrific panelists. They're gonna share information on some of these resources and where to find them. So with that, let's introduce our panelist. And if you can go to the next slide please.

Saralyn Bunch is a technical project lead for the federal energy management program, or FEMP. At FEMP, Saralyn is responsible for cyber security, for facilities related control systems, water management, energy efficient lighting and controls, and energy efficient product procurement. Prior to joining FEMP in 2010, she was the manager with the DOE office of civilian radioactive waste management. Saralyn has a BS in civil engineering from the University of Pittsburgh and a masters in engineering from the Catholic University of America.

Tara O'Hare currently serves as the implementation and commercial outreach lead for EPA's water sense program in Washington, DC. Tara has worked on water sense for the past nine years and is responsible for program operations, partner support, and outreach to commercial and institution facilities. Tara _____ the development of water sense at work, best management practices for commercial and institutional facilities and has delivered trainings and webinars to a wide variety of stakeholders from all parts of the commercial building sector.

Tara has a bachelors in business and environmental management from the George Washington University and a masters in environmental science and policy from the Johns Hopkins University. So thank you Saralyn and Tara for being with us today. And before we get started with the presentations and if you can go to the next slide please, I wanna remind our audience that we will hold questions until near the end of the hour. Please send in questions through the chat box on your webinar screen throughout the session and we'll try to get to as many as we can in the time provided.

Also as a reminder, this session will be archived and posted to the web for your reference. So to start us off, Saralyn is gonna share resources from FEMP. I'll make a quick note that FEMP is the part of DOE that's in charge of helping federal agencies meet energy and water goals. The tools her office has developed were originally built with federal agencies in mind but most are easily transferrable

to private buildings. While we might have less attractive carpet and paint styles, federal building are not all that different from commercial buildings in terms of how they use water. So Saralyn, please take it away.

Saralyn Bunch: Thank you, Andre. Next slide please. Next slide please. Back [laughs]. We're now on Tara. Okay. My whole presentation just went by. It would be slide 9. 8. 8. Slide 8. Good. There we – oh. That's it. Well, it was. I think we're having some technical difficulties pulling up my slide which starts with slide 8 to the screen controller.

Andre de Fontaine: Yeah. Saralyn, I'm not sure what's going on but it looks like our logistics folks are trying to work through this.

Saralyn Bunch: I _____ speak to the slides but it's going to be a problem for everyone else.

Andre de Fontaine: Yeah. Why don't we – if folks can just be patient for one minute and then it seems like it's jumping to the wrong slide once you put it in slideshow mode. I don't know why it's doing that but that seems to be the issue. And I guess one alternative for our team would be maybe to load the PDF version instead if it keeps giving us problems.

Saralyn Bunch: Okay. It looks like we're back in business. As Andre started out by saying, FEMP does develop tools and resources to enable organizations to strategically improve their water management. We break our program into three areas: policy and legislative support, technology integration, and then project implementation. I'll be speaking too all three of those through examples and the categories of the examples I put a little star next to with guidelines, water management planning, O&M, alternative water tools, under utilized technology opportunities, and water project screening.

I selected these from a wide variety of available tools on our website because I thought they had the most direct transference from the federal arena to an organization of Better Building. But our goal is to reduce water demand, support water resiliency, increase efficiency, and offset fresh water with alternative water. Next slide please.

Thank you. Water management planning. As you know, a successful water management program starts with comprehensive strategic planning. The process for developing a strategic plan is generally the same for an individual facility as for an organization.

The plan provides information about current water use and charts, of course, for water efficiency improvement, conservation activities, and water reduction goals. A strategic plan establishes the priorities and helps the site for organizations, plan for funding for water efficiency projects that provide the highest impact. It is common for a site or an organization to work with the contractors to help deliver their water management strategy services.

So to help in this process for federal agencies, FEMP developed a template for comprehensive water management statement of work which can be used by organizations to assist you if you do opt to use a professional when developing your water management plan. These are listed on the slide are some of – are these steps we recommend for that water management plan and you're starting in Better Buildings, as Andre said, with setting your goal and that is the first place to start.

Your goals will filter through your organization to direct and guide the use of the plan. Then as I said, you assess your current water use and the _____. You develop your water balance and we provide a water balance method through our tools. Then you evaluate your opportunities and once again, we're going to go through a water screening tool that shows how to do that in a very easy manner. It's only one way. Implement your project.

We look at project financing. We look at ESPC, UESE implementation. If you do work _____ are these types of organizations then yes, you would be looking at contractors for in house implementation. And then we track progress through collection of data and meters. So lengths provided at the bottom of each page are hot links to the location in our website where the tool that I'm talking about on the slide exists. Next slide please.

Slide 10 provides a high level information of what to assess, how often to assess, and action items for each equipment type with the goal of providing useful tips on how to maintain and operate water equipment efficiently to save water and prolong equipment life. This information is intended for O&M managers, technical staff, and resource managers as it applies to water using systems and equipment typically found in facilities. These guidelines are not designed to replace or supersede manufactured guidelines or _____.

The following guidelines identify actions that should be completed on schedule intervals, as well as unplanned actions that can take place daily and they are both aspects of effective management; by

regularly inspecting water using systems and individual pieces of equipment and verifying that systems are operating and performing correctly, reporting and repairing all leaks, and encouraging your building occupants to do the same. Reporting and repairing quickly all damaged equipment such as broken or misaligned sprinkler heads, malfunctioning faucets, flushometer sensors, broken flush valves, and altered showerheads, identifying and routinely inspecting and encouraging users are a key to saving water.

Operating and maintaining equipment according to manufacturers guidelines is also key. For this purpose, we've developed a tool, a table type tool, which lists the equipment schedule, the frequency, and recommended times for looking at a maintenance action, assessing the actions to be taken by ONA managers as well as technical staff and resource managers to assess the equipment. And we give them action items that will resolve these problems. So that's one of our tools. It's a quick operation and maintenance guideline not to replace the manufacturers recommended guidelines but to augment those on a schedule for your maintenance. Next slide please.

Another thing that we do in the area of water is guidelines, as I said. We've develop net zero guidelines which are on our website to end strategies on net zero to help improve our water resiliency as we feed into water resiliency. We have looked at alternative water, which is rain and reused waters, your gray waters, your fresh waters, and your treatment return. We are minimizing water consumption, minimizing wastewater discharge, maximizing alternative water use and trying to return the water to its original source.

So the net zero water, of course being engineers, we developed a formula of what net zero means which we include on our website. It's a very simple formula that includes total water use. The amount of water consumed within the boundaries of the building from all sources over the course of the year. Your alternative water use, which is the amount of water consumed within the boundaries of a building for a sustainable water source not derived from a fresh water source over the course of the year. And in a net zero building, the total annual water use should be offset by alternative water in part of completely and then water returned is the amount of water collected from the building systems, green infrastructure and on site treated wastewater, which is returned back to the original water source over the course of the year.

In a net zero building, the total annual water use should be offset

by water returns to the original source in part of completely. Now, we've developed some resources as well as the guidelines to help people to work towards and hopefully achieve net zero water. We've written two scenarios, which are available. The ideal net zero water building scenario and the mainstream net zero water building. We realize that some locations are not economically feasible or achievable to maintain a true net zero water so we develop the mainstream net zero water building where some water is returned to the waste water treatment plan as _____ water and it is not a true net zero but it is a – what we call a more mainstream option.

Next slide please. So in order to help in achieving net zero and reducing water, we strongly encourage the use of alternative waters. In this light, we've developed a series of alternative water map to help organizations strategically plan where to implement alternative water projects. Alternative water supplied by sustainable sources can be used to help offset fresh water and ground water. So these alternative water maps include – sources include harvested rainwater, captured condensate from air handling units, and as well as reclaimed water. Alternative water is typically used in non-potable applications such as irrigation, cooling tower makeup, and vehicle wash. It is a good source for that.

We've developed these maps, the rainwater harvesting potential is an interactive map that gives – that shows where in the country you have high rainfalls, high potential to harvest the water. As you can see, it's kind of intuitive but we collect the data on rainfall and evapotranspiration, et cetera, and mapped it up for your convenience. Very high potential in dark green. Very low in the lowest in the light, light blue and then where we had no data. But it's almost intuitive that rainwater harvesting is probably not going to work well in the desert.

So then we have the rainwater harvesting regulation to be used in coordination with the maps as a whole. So states encourage rainwater harvesting and actually very much supported with incentives so on and so forth. Others do not allow it. Actually, only one other simply doesn't allow it. But and that is Colorado because of their riparian rights but they do have some exemptions that they are starting to loosen up on. Next slide please.

These are the other – the suite of maps. Reclaimed wastewater providers throughout the United States. As you can see, this is just starting. There are not a ton of them but we are updating these maps on a cycle and this is one of our more current maps but we're

hoping that we get more providers of the reclaimed wastewaters. And then your condensate capture potential. We ask that people do not use these maps in a vacuum but as part of their overall planning process to make decisions on and building business cases on the use of alternative waters.

And next slide please. Okay. Now we have the technology opportunities. These are not – what we did was in FEMP, we always looked at energy technologies that were under utilized but did not look at water technologies that were not used as often. So what we did is we've set some rules for ourselves as a team, as the water management team at FEMP to evaluate technologies that we feel should be considered for implementation. So we set some criteria. They're typically under utilized. If everyone's utilizing them, they don't really need our help. They're proven to have water savings.

They are available on the market. That means you don't have to soul source them. You don't have to deal with the specialty and you don't have to customize them. They're available and they've suitable for existing building because a good bit of the federal building stock are existing and I'm sure you're facing that also. So we started this by looking at a group of technologies and narrowing those down and came up with researching three a year. So you can see we started this a couple years ago. We look at – and now we have information available at the link on acoustic leak noise loggers, advanced cooling tower controls, connectionist food steamers, multi stream rotational sprinklers, automatic sprinkler shut off devise, steam sterilized condensate _____ and our latest one is an onsite wastewater treatment system.

These are our technologies commonly available. That will get you into efficiently using your water, thereby using less water. Next slide please. Thank you.

Another tool that everyone seems to love is our water project screening tool. This is how we screen projects to see if they're a good candidate to map out for a water project. The first look, it says, "Have these systems been replaced? What's the age of them?" The type of information goes into this simple but very valuable tool that's an excel based tool that we built for screening and it is widely used in the federal government. We check our hits and we get a lot of positive feedback. It was originally done for people with CSPC contracts coming up to include those but it is being used for water management systems as a whole and it helps really to build the business case.

Next slide please. Okay. And one thing that FEMP does do, accredited CEUs, which I know you're all looking for because they're very valuable plus it's a learning process. So we've developed a three part comprehensive training in water management. They are accredited. They're available for free through the FEMP website. The water management basic does have federal policy in it so that is the one that is not as valuable to you but there are still valuable information in there. The other two are very technical courses. They take you through water balances. They take you through best practices and they're very – I've taken the courses myself and every time I take them, I find that I learn something new.

They are very valuable and they do help with accreditation and they are free. Other – I hate to say this but other training companies have kind of taken some of our training and used that but they charge you and we don't. And there's the link for that and that kinda completes, I believe, my portion of the presentation but I'll have to check on the next slide. Next slide please. Yes, that completes my portion of the presentation. Id' like to thank you all for listening.

I also have available a very good resource named Kate McMordy Stoten who is a recognized expert at the Pacific Northwest National Laboratory and I've included her contact information and she loves to hear from everyone about water. And of course, our website is highly valuable. I only highlighted a few of the many tools and information we have available. Thank you.

Andre de Fontaine: Okay. Thank you, Saralyn. That was terrific. Now, let's advance at least one more slide and queue things up for Tara who's going to give us a little background on water sense and the role it plays in helping consumers and building owners save water before describing a few of the very helpful resources that her program has developed to advance water efficiency in all sectors, including some new, exciting items for the multi-family housing sector. So Tara, please go ahead.

Tara O'Hare Thank you, Andre. Next slide please. And the next one too. Sorry, forgot about the ... excellent. So the water sense program was created by EPA in 2006 as a sister program to Energy Star. They were completely voluntary and our whole goal is to really provide simple ways for people and businesses to identify water efficient products, programs, practices and homes. So the water sense label is what you see on the right side of the slide and when you see that,

with anybody. And you can also use this to set up alerts so that you can catch problems as soon as possible. This is especially hopeful and very large equipment like cooling towers, boiler systems, and other very large systems. Another one is that leaks add up very quickly. Often, they're about 6 percent of facility water use, which gets close to the amount of energy percentage used to heat and cool buildings. So it's a significant amount of water, basically.

And one thing to remember is that unlike energy products, water fixtures usually continue flowing even if there is a failure. So basically, it may just keep going behind the scenes and reduce the efficiency of that piece of equipment or of that fixture and you may not even know it. And this is because all water fixtures and equipment have physical components that can break down. And these break down in over time and they include things like valves, flappers, pipes, gaskets, and so it may continue to work but it may be working a lot less efficiently. So that's another reason to always be looking for leaks and fixing as soon as possible.

Next slide please. So I also like to give everyone a very generalized overview of where water is typically used within a commercial building. This is just a basic overview. So I like to remind everyone that every facility is different and that you will likely have to look at a water assessment of your entire building or calculate a water balance as Saralyn mentioned, so that you can really find out what's happening in your own building. But we give this as just kind of an overview so you know where you can get started. For the most part, it's a domestic and restroom water use within any of the commercial buildings. It's consistently around 30 percent of water use and this is one of the places that's a great one to start.

The next one is that very significantly with your climate is the cooling and heating of your building. That's usually a pretty big one depending on the climate. And then also the landscape water use. So if you have a very large irrigated area of _____, you're gonna have a significant amount of water use there as well. And sometimes, that can be up to 30 or 40 percent of your water use so that's a big one to watch out for. And you'll see that others are specialized uses or commercial kitchens are huge water use obviously in restaurants, for example. So I encourage you to take a look at your facility and figure out how the water is being used there.

Next slide. One of the ways that you can do this is to start tracking your water use just like you track your energy use. I know that

many of you, if not all of you are using portfolio manager to do this. So I encourage you to add a water _____ to your account and that can actually help you track is over time so you can actually get trend analysis and get some more of the larger pictures of your water use over time. So once again, if you want more updated information, you may wanna take a look at some of the submeters or water monitoring technologies that exist already.

Next slide please. So Water Sense has created a great deal of resourced beyond just labeling products that can be used to help commercial buildings and residential buildings reduce their water use. So we have a lot of information about water use information about facility types, a set of best management practices, water saving kits, assessment tools, worksheets, and checklists as well as a lot of live and recorded training webinars and case studies. So I encourage you to take a look at those if you're trying to figure out what your next step would be for water efficiency in your building.

Next slide please. So one of the ones that we like to encourage people to use is some of these are good for when you're getting started. One that we find particularly helpful is a simple water assessment checklist that you can fill it out online or on an iPad or you can actually just print it out and take it around your facility to help quickly identify and target some potential products. And it eventually goes through and gives you some best practices as well. So that's an easy one to get started with that you don't even need much experience with water. You can just kinda take it and use it. We also have different formats of sample worksheets for you to use which are usually pretty basic but it can be helpful to have something that you can just use and not have to format.

So we have building water surveys, list of water meters, consumption history, equipment and water use inventory, and a few other different ones. We've also created an Excel based tool. It was originally created for hospitality facilities but it's _____ used for most other facility types as well, if you just kind of correct the language to change guest rooms to private restrooms. So I encourage you to take a look at those if you're just getting started.

Next slide please. This is just an image to show you what the simple water assessment checklist looks like. So you can actually look and it will go through different things to look for as you're standing in that particular area of the facility. So testing and calibrating all of your sensors on your flushing devices, for example, is one that we encourage people to do. So it references the section of our best practices manual that you can refer to as

well so you know where to go to find more information. Next slide please.

We also have created a set of best management practices. This is an online guide called Water Sense at work and it basically goes through almost every water using area within a facility to encourage you and give you more information on how to actually manage water in that area. So we cover management planning, monitoring and education, sanitary fixtures, commercial kitchens, outdoor water use, mechanical systems, laboratory and medical equipment and on site alternative sources of water. So we encourage you to take a look at those because they're quite expensive.

Next slide. So each one of these, we actually started – they started as an update to some of the best practices that were given – put together by DOE and EPA and we expanded them to a bit of greater depth to include some more information. So in this case, we have 36 best management practices and each _____ us an overview of the technology, provide some operation and maintenance and user education tips, retrofit and replace an option and give you sample calculations for calculating your payback and your water and energy savings and dollar savings.

We also have more than 15 case studies from all different types of facilities that are using these best practices. Next slide please. The new exciting thing that Andre was alluding to is the EPA's new 1 to 100 water score from Wealthy Family Buildings. We've been working on this with Energy Star for several years so we're very excited to tell you that it's available. It's available for existing multi-family buildings with 20 or more units and it's basically calculated using a water use intensity metric, which is very similar to Energy Star's regular energy scores.

And in this case, it's slightly different because it's based on whole building water use and total building water use divided by square feet, which is the water intensity portion. It's been normalized for weather and operation including – like your unit density and then these inputs are adjusted for a water context. So it's not just the indoor portions that's used. It also include outdoor water used which is why it's slightly different than Energy Star or the standard Energy Star scores. In this case, irrigated area is treated like square feet. So it basically is included in your intensity metrics.

So in many cases, those of you that are already using portfolio manager to manage your water use, you may just needed to add

one specific piece of data to get a score. So this one piece is your irrigated area size. So it's just one of the metrics that you can go in and add in your buildings overview basically, your building properties. So once this is entered, you're eligible to get a score and that's something that you can look at to see how well you're doing compared to others.

There is no EPA certification or building label based on the water score because we just released it. We haven't really gotten to that next portion. So we encourage you to take a look. There's about 18,000 buildings that are multi-family buildings that would be eligible if they just added their irrigated area. So if you are one of those multi-family buildings, I encourage you to check it out because it is something that you could get relatively simply.

Next slide please. So we've also created some targeted multi-family guides and these are available for four separate areas so far. We have bathrooms, residential kitchens and laundries, outdoor water use, botanical systems, and we will be posting a multi-family water assessment tool in the coming weeks. So if you are a multi-family building, this is basically the similar information that was included in Water Sense at work. It's just targeted to a multi-family audience. So I encourage you to take a look at that because it can help you improve your score once you've already gotten it or just help you reduce your water use either way.

Next slide please. The next I wanted to touch on is just out outdoor water use resources because water use outdoors can be very significant input into your water use overall. We wanted to make sure that everyone was aware of some of the materials and resources that we put together because it may not be something that you thought about recently. One that's particularly good is this water smart landscaping guide and this can help you kind of put together your landscape in a way that minimizes the amount of water needed or need – irrigation water that's needed to maintain this landscaping.

So not every landscape needs irrigation. It's often dependent on the plants' need as well as the climate in your area so we encourage you to take a look at regionally appropriate plants that can be used and have a minimal need for irrigation. So we talk about those in the landscaping guide and then we also provide lists by state that you can take a look at so you know what's appropriate for your area. And then also we have worked with a great deal of certified irrigation professionals if you are interested in getting some expert assistance with either your irrigation system design, the

installation, or an audit of it over time. So we have a list of those, a directory of the certified irrigation professionals available if you'd like them.

Next slide please. So we also provide webinars through Energy Star and Boma, for example, and a few different other organizations that we're partnering with. So these webinars are open to everyone just like this one is and so we encourage you, if you want some more detailed information about specific water use areas. That we can encourage you to take a look at some of the ones that are coming up in the next couple of weeks and some that we've already recorded and have been done on specific water use areas.

So in a few weeks, I'll be doing one specifically on fixing leaks and stopping water waste. And then in May, we'll be doing one on taking – basically water assessments and how to determine how much water you've used and within your facility. So we also have recorded webinars that we have already available on our website and we're also going to continue to do webinars throughout 2018. We just haven't planned them yet. So I encourage to check back so that you can see what we're offering.

Next slide. And that's it for my portion. So you can contact me. My information is here or you can check out more information on our website. Thank you very much.

Andre de Fontaine: Thank you, Tara. And if we could go to the next slide, we've got a few additional resource with some nice links provided by the EPA. And then if you can go to slide ... yes. And one more slide please. Pass the Q&A. So here are a few other resources that folks can check out. We just absorbed a lot of information but these are the main websites where a lot of these tools and resources live. So if you go to the Dealy Better Building Challenge Water Savings page, we've provided links to the various landing pages that we discuss today. And here's where you can also find some of the case studies, the showcase projects and implementation models that our partners have put together.

Here is the link. Saralyn showed this previously but this is the link to the FEMP water management website and then also the landing page for EPA's water sense program which really has a wealth of information on this topic. So with that, why don't we move into the Q&A and it does look as though there are a few questions that came in but please, as we go through this, there's definitely still time. So use the chat function to submit your questions. So let me

start with one for Saralyn. It looks like there's a couple of questions that came in on the rainwater harvesting with folks wanting to know how do you determine the potential for rainwater harvesting? Can you elaborate on that a little bit?

Saralyn Bunch:

Yes, I can. Specifically, we collected data from various resources for different for different maps. The sources of the data, I can obtain by the map developers at the Pacific Northwest National Laboratory but there were several – not several sources for each map but each map had different sources. Specifically, we went down the zip code level data where we could get it and I can get those sources in a follow up if anyone is interested in those. We did not look at the population density. We, for the rainwater captured legislation, it is an interactive map where you can scroll onto the state and click to that and it includes the state resources for alternative water and any incentive programs they have.

Not only whether or not they allow the alternative waters and the capturing of those but their resources that are provided and any incentive programs that they have by the state. That is our oldest map and that one is we are looking to update in the coming year based on resources we get, of course. But that is very popular. It takes you right down to the state resources with links to the state appropriate resources in that area. So that's kinda how we looked at the map. I can get the data sources.

We did when we could go down to the zip code level in other cases like the state – the rainwater capture legislation. We researched that in house. So we had a variety of resources for each map and I can follow up with these specific resources if anyone's interested.

Andre de Fontaine:

Okay. Thank you. And Tara, question for you on the score for the multi-family buildings. Can you clarify whether this will allow for benchmarking against peers?

Tara O'Hare

Yes, it does. Just like any other Energy Star score, it does compare you and give you a 1 to 100 metric and that is based on modeling that we've done with data from all over the country of commercial – or multi-family buildings. Excuse me. To make sure that we're using the most appropriate models. So the score, in fact, is a benchmark on its own against your peers.

Andre de Fontaine:

And as a follow on, are there any plans to expand that to other building types like commercial office buildings, for example?

- Tara O'Hare* We would love to do that but right now, we don't have the data available on a national level to be able to figure out the correct modeling and give an appropriate score. So the more data that you enter into portfolio manager, at some point, we may be able to pull out enough data to create another model and the score. So we just put in our plug to encourage you to track in portfolio manager because that is one of our – the main source of our data.
- Andre de Fontaine:* Great. Thank you. And then a question for you, Saralyn, cooling towers can often be one of the largest energy users within a building. Does _____ have any specific resources related to cooling towers?
- Saralyn Bunch:* We do. Of course we do. I will say that we have a best management practice, number ten, on the website that is specific to best management practice for cooling tower management. I will also give kudos to Tara in that the best management practices, a lot of the best management practices were developed jointly with the water sense program and the FEMP program. So that is a place where people don't think federal agencies necessarily work together but we do occasionally and with great results. So invite you to go to the website or to just Google FEMP water, best management practices and it is best management practice number ten on cooling towers.
- Tara O'Hare* Can I just chime in there as well?
- Andre de Fontaine:* Sure.
- Tara O'Hare* The third resource on the additional resources page for water sense is a tool that was created by the environmental defense fund, Jimmy and a few other different organizations. And they have a specific unit and tool kit. It's about 45 pages long, I think, on cooling tower systems and a YouTube series of 12 videos. So if you want really specific information on how a cooling system works, I would encourage you to check out that and that can hopefully give you the information that you need.
- Andre de Fontaine:* Great. Now, I've got a question that is for both of you and then I'm gonna answer part of it too so it'll be the full trifecta. But the question is do either speaker have resources demonstrating energy savings or related water savings? So this is really trying to quantify the energy impacts of water savings _____ to take place at the end use level and I'm curious to know the answer from our two speakers. I will just say that that's often times difficult and I always try to split it up into two forms of energy savings. There's

the energy savings that sort of occur system wide where as you reduce your water consumption, the water treatment plant and the wastewater treatment plant have to work less because they're no longer treating the same amount of water. They're no longer pumping it. But then there's also the energy savings that take place within the building itself because you don't have to heat or pump that water within the building. So it's sort of a question of where you draw the boundary.

But having said that, I guess maybe I'll start with Tara. Any tools or resources or sort of frameworks that people can apply to try to quantify the energy impacts of their water efforts?

Tara O'Hare

Yeah. We, like you, also split it into two separate areas. For the most part, water sense focuses on the internal building energy savings because that is kind of the easiest and most tangible for most buildings. So one of the things that we've done is in each one of our best management practices and in our tools, in the Excel tools and the one that's listed as the first one in the additional resources, we include energy savings for each equipment piece or fixture so that when you go through, you can figure out the difference between your current set up and your water and energy savings from replacing it with a newer, more efficient technology. So it will allow you to put in the number of fixtures as well as the information for the fixture type and then it will go through and calculate that based on your rates.

So not only just your water rate but also your energy, natural gas, and electricity rates as well. So if you really wanna get very down into the nitty gritty, I would encourage you to take a look at one of those Excel spreadsheets because it will allow you to actually calculate some of that.

Andre de Fontaine: Great. Saralyn, any other thoughts from you on that question?

Saralyn Bunch:

Yeah. I do have a thought that we do kind of keep them separate just like Tara does. However, we do have a program that is mandated for federal agencies in procuring of energy efficient products, one of the programs I run. And those products include Energy Star products, water sense products, but also where they're not covered in the commercial area, a lot of times by energy star and water sense, FEMP designated products and in FEMP designated products, we include heating and cooling like electric chillers and water chillers commercially and in those products, we look at the most energy efficient products but also we look at the – but they will include information on the water savings.

So while it's a separate program, we do have FEMP designated products that are water using products included. So that is a connection point not in the water program specifically but in what is covered in the FEMP energy efficient product procurement program and if you Google FEMP, EEPP and you look at FEMP designated products, which tend to be large commercial products, you can see the water using products that are included.

Andre de Fontaine: Great. Thank you. I think we've got time for one more question and this one goes to Tara. Are you aware of resources that deal with water conservation in facilities where legion LL is a concern?

Tara O'Hare Yes. We have gotten this question, especially from buildings with vulnerable populations like hospitals or schools and the CDC actually has an excellent guidebook on managing legion LL within your system. Since this is very specific to a system and the heating of your water, it's something that we encourage you to really dig into in the CDC's book because we can't give really specific information or general information because it's very specific to your facility. So I can send a link to these circulated with the slides and to let you know where to find that or you can just Google CDC legion LL list and water.

Andre de Fontaine: Great. You answered that so succinctly that I think that we actually have time for one more question and this one I'll direct to Saralyn. You mentioned some financing resources for water projects. Are those that FEMP has developed or at least looked at, are they specific to federal facilities or can they also be used in commercial facilities?

Saralyn Bunch: Those, Andre, are for the EUSC and ESPC contracts so they are the innovative financing contracts, the pay back periods and so on for federal facilities. There is some information that we've developed such as water escalation rate study that we just performed that can be used by organizations, the information of the research we've done on escalation and those types of things. But the actual tools for financing and estimating are used – were developed for the ESPC and the UESP program. So parts of it, they can use like the escalation study that was just completed in November and posted with the escalation rates and the water rates.

And others are more of a tool for federal contractors doing innovative contracting on federal facilities.

Andre de Fontaine: Great. Okay. Thanks so much for that. So this was very lively. Thank you for all those terrific questions but just in the interest of time, we're gonna have to close off the questions and I'll share a couple of other pieces of information before we shut off for the day. We hope that you'll plan to attend the next Better Buildings Webinar, which is about a month from now, Tuesday April 3rd. Same time. And this one is on data management.

It's titled "Taking Control: Best Practices in Energy Data Management and Tools For Success." It'll feature public, commercial, and multi-family sector partners sharing best practices on energy data management and will also introduce DOE's energy data management guide for the public sector. So definitely data is a key issue and we hope that you'll tune in for that webinar.

And if you could just go to the, what I think is the very last slide. I'd like to, before closing, just once again, thank our great panelists, Saralyn Bunch and Tara O'Hare. Really did a great job sharing a lot of very valuable information on some great tools that we think can help a lot of organizations save water in their buildings. We've showed their contact information a couple times. Here it is again. They've both signaled that they would be happy to answer follow up questions, next stuff that comes to mind or questions that we were not able to get to during the Q&A period.

And then also, if you'd like to learn more about the better buildings challenge or the alliance, please do check out our website or you can feel free to contact my colleagues, Holly Car and her email address is shown on the screen here as is mine. So I encourage all of you to follow the Better Buildings Initiative on Twitter for all the latest news and as a reminder, you will receive an email notice when the archive of this session is available online. And thanks to everybody for tuning in this afternoon.

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