

Bri Colon:

All righty. Hello and welcome everyone. We'll get started here in a minute or so and let folks trickle in. Thank you for joining us.

All righty. Well, I'll go ahead and get started and let folks trickle into our room. Again, welcome, everybody. Thank you for joining our webinar today. Welcome to our overall 2023-2024 Better Buildings webinar series. We're dedicated to bringing you the latest in actionable insights for leading industry experts. This annual series is a chance and opportunity to really explore a variety of different topics, technologies, and trends that affect your organization as well as efforts to accelerate decarbonization broadly and energy efficiency adoption. If you go to the next slide, today's webinar topic is called 3-2-1 Action. I don't know if directors still say that. But we here at Better Buildings are really excited to learn and share information about how folks are going about and transforming their climate plans into action. Before we get started, just a couple housekeeping notes I want to share. Today's webinar will be recorded and archived on the Better Buildings Solution Center. We'll follow up when that recording and the slides are made available. Next, you'll notice that attendees are in listen only mode, which means folks' microphones have been muted, but if you do experience any audio or visual issues throughout the webinar, please go ahead and send a message in that Q&A box located at the bottom of your Zoom panel, and I'll make sure that our technical assistants there can be in touch and help and do any troubleshooting. Go to the next slide.

My name is Bri Colon. I have the privilege of serving as your moderator today for today's webinar. I currently serve as the Fellow in the Building Technologies Office at the U.S. Department of Energy. I'm thrilled to be here moderating today's webinar. Go to the next slide.

We have a great lineup for today's topic. Just as an overview, I'll set the stage with whatever interactive platforms that we'll utilize throughout today's webinar. We'll transition into some polls, utilizing that engagement forum. Then we have a great lineup of speakers today who will talk everything under the sun related to climate planning. Then we'll end with the Q&A and a few closing notes. Go to the next slide.

If folks are able to join us over at our interactive platform called Slido, we'll start off here with a few polls. If you go to www.slido.com on folks' mobile devices or if you open a new panel on your browser if you're utilizing a desktop, today's event code is #DOE. We'll utilize this platform. If you'd like to ask

panelists questions throughout today's webinar and submit them at any point throughout presentations, we'll answer those towards the end of the webinar. You can select a thumbs up icon throughout, upvote certain questions. That will result in the most popular rising to the cream of the crop there and encourage folks to utilize that feature.

If we go to the next slide, we will kick off here with a few starting polls. The first one we like to do is just get to understand who's in our virtual room here and learn more about our audience here. So, if you could join us over for those questions. If you do have any issues, please go ahead and send a message to our tech support. If you go to the first poll here. This is really helpful to understand what organization you all are coming from. As the numbers here level off, we'll go ahead, and I see local government. We have a great showing too from folks. Good organization representation from our contractors and consultant community, industrial folks. If we could scroll down a little bit, we can see nonprofits, state government representation, higher education. I know we have some speakers today that will speak to the higher ed experience too as well. So excited to have those folks in the audience. Great. Thank you. Please feel free to keep inputting information to that poll. Thank you again. Please transition to the next poll.

The first question we want to understand too are folks' experiences with challenges that your organization might have experienced related to climate planning. Understand it can be a long process to embark on these types of plans. Maybe you haven't set a formal plan yet. We'll have some questions about that here later in the webinar as well. But if folks are experiencing challenges related to climate planning and what that means to you, we'd be interested to learn a little bit more about that at your organization. I'm seeing cost coming up either for technologies or maybe capacity too, coming up whether it be related to staffing, funding, financial commitments related to climate planning. Yeah, that buy-in from either internally or externally I'm seeing from stakeholders and community engagement. Our speakers will talk to some of their strategies and really be able to garner that buy-in too later. A little spoiler there. I'm seeing additional challenges around conflicting priorities and maybe how to socialize that and understand the different levers across the organization that might speak to continuing to really garner that buy-in. This is really wonderful. Yes, thank you for sharing this. Technical assistance for states. I think that's huge in being able to really leverage that in the many different forms. Wonderful. Training overall. Trying to think through what is the best strategic for going into an organization

specific climate plan. I'm seeing a few dittos and support around silos, how to break down those silos. That collaboration is definitely key and a lot of successful development of climate plans, and then that implementation which is our focus for today's presentation. Great. Please feel free to keep inputting information. We can transition to the next poll question here.

Thank you again too for folks inputting that. On the flip side, I'm curious what successes folks have had with their organization related to climate planning. How have they seen that be a crucial strategy and potentially be more impactful in thinking through strategically how to implement decarbonization projects and priorities there? And how has it been beneficial to your organization's decarbonization work broadly? I'm seeing some folks saying it's been really crucial in helping think through setting a baseline and setting that target. It's been helpful in maybe that knowledge transfer when there's potentially been turnover. Better awareness, maybe having the whole organization understand how sustainability and decarbonization are an organizational value. Disability. Yeah, definitely broadcasting that not only within an organization but facilitating that outreach and building out awareness to either stakeholders or additional organizations that you might partner with. That recognition of being a leader and continuation of that either in local communities and then on a national scale. I can't imagine. Benefits in climate planning in terms of gaining access to local funds and incentives. Opportunities – I know they're out there to help draft those plans and receive incentives in doing that. Implementing action across all departments. Maybe when a plan has been developed, really that having that be a springboard too for connecting with other departments too within an organization across sectors. Well, great. Well thank you all for continuing to input that information. We really value here at Better Buildings understanding where folks are experiencing success with climate planning and then maybe where also they're getting stuck with our question right before this. We'll transition to our next slide.

I mentioned we have a great lineup for presenters today. That information is really helpful in informing them as they get into their content of understanding where you all in the audience are experiencing success and challenges. First up, we'll have Tom Abram. Tom is a principal at Introba's Design Analytics practice, and he is really crucial in that work in developing analytics-driven decarbonization strategies for building portfolio owners. In his role as a Lawrence Berkley National Lab affiliate, he is a technical account manager with our Better Climate Challenge program, and

he works closely with our partners. You might recognize him through other programmatic opportunities that we've had. He works with several sectors in this role with higher education, data centers, retail, and local government to name a few.

Then we'll have Greg Farley. Greg is the Director of University Sustainability at George Mason University in Fairfax, Virginia. He's held similar positions and roles at Washington College and Chesapeake College in Maryland. He'll share some of those stories and best practices from those roles later. He was also Professor of Biological Science and an endowed teaching chair. Under his leadership, Chesapeake College became a 2017 Better Buildings goal achiever. Huge congrats and kudos there to Greg and his team in that work. They cut their energy use 24 percent. He's also the co-author of a book which I've added to my reading list called *Thinking Like an Island* describing sustainability and energy advancements in Hawaii.

Finally, we'll close with Cory Pouliot. Cory is the Senior Director of Facility Operations at Boston Medical Center. Cory oversees Facility Management Department along with the management of Utility Operations and Procurement. No small feat. Prior to his position at Boston Medical Center, he held the following roles as Senior Director of Facilities Management at Tufts University in Boston, and Facilities Director at Pali Momi Medical Center in again, in Hawaii. I like all these connections there. In each position, he oversaw the engineering construction, environmental services, and energy and utility departments.

We are thrilled to have our speakers here today, and I'll transition next to kick off with Tom to talk more about emission reduction planning broadly and set the stage here. Tom, thank you for being here with us, and I'll turn it over to you.

Tom Abram:

Great. Thank you so much, Bri. Next.

So as Bri said, my name is Tom Abram. I support our fabulous partners in the Better Climate Challenge, and also work on decarbonization analytics and strategy an Introba. Also have experience on the owner side, so managing energy and sustainability at both University of Illinois and San Diego State University. What I'll be talking about today is really how do we develop action oriented decarbonization plans? Next.

So first of all, Better Climate Challenge, if you all aren't aware, it's a program through the U.S. Department of Energy where

partners commit to a portfolio-wide reduction in their greenhouse gas emissions by at least 50 percent in 10 years. The focus of this particular program is really on your operational emissions on scope one and two. In order to achieve that, we're looking for a combination of energy efficiency, electrification, on-site renewables, and off-site as well. But no offsets as part of this particular program. And really, the focus here is on these absolute targets. Then as part of the program, we're here to encourage and to share solutions, barriers, and innovations within our partners. Next.

So as part of the resources that are available through the program, we have one-on-one support from technical account managers like myself and others in the program. Access to researchers at both LBNL and NREL talking about discussions around emerging tech. So, we like to think of the transfer bidirectional in terms of allowing researchers to understand what's happening within the markets and within the marketplace and then vice versa where partners can understand what might be happening in the world of research. Then there's a big element of collaboration between partners. So, this happens at working groups and peer exchanges, really connect similar organizations to understand what successes have occurred and how they can be replicated. Next.

Diving in a little bit on the one-on-one technical assistance. There's really three main categories as part of the program. So, one is on reviewing and providing feedback. So, this is really a second set of eyes. We can review documents like climate action or decarbonization plans. We can look at audit results, review RFPs, things of that sort. Another category is around resource sharing. It is really helpful as folks are trying to identify and implement solutions through their climate action planning efforts. It's really helpful to understand what others might have done already. This is looking at identifying case studies from our experience in the field as well as other partners through the program to really show what can be done, and how it can be replicated. We also have a broad category around brainstorming and identifying solutions. So, this is really looking at being an unbiased partner where we can develop – help you develop various solutions to your decarbonization challenges, so big one is always on electrification of heating systems. We also talk a lot about how can we prioritize buildings and measures within your portfolio? Then finally supporting you all in developing a detailed emissions reduction plan. Next.

So, one of the resources that was developed as part of the Better Climate Challenge is this framework for greenhouse gas emissions

reduction planning for building portfolios. This framework is really – was really developed to help building owners create actionable plans to reduce their operational carbon emissions. The focus is really on how do we tackle a large portfolio of buildings? How do we prioritize? How do we begin to develop a phased implementation plan as part of those efforts? It really looks at how can we look at the broad scale of looking at large portfolios of maybe dozens or hundreds or thousands of buildings, and then hone in and then zoom back out to be able to develop a comprehensive plan. Next, please.

So why did we feel that this framework was needed? From our perspective, in order to allow these plans to succeed from an implementation standpoint, it's important for these plans to really be action oriented. There's a wide variety of what we've seen out there in terms of climate action plans or sustainability plans. They're great at setting context, engaging stakeholders to provide the goal-setting and broad set of measures at a very high level of what could be – how an organization might achieve their carbon reductions. Then we also see building-level energy audits or emission reduction audits that really focus on the individual buildings and what can be done on that particular building. However, what we did was synthesize the two. How can we really take the next step with climate action planning in order to provide a detailed pathway to achieve your decarbonization goals within the building portfolio and fleets? So the idea is really let's take these targets into actions. Let's look at the phasing. Let's look at the funding as well as the technical solutions and really focus on what are the greatest contributors to your operational emissions, and really look at streamlining these planning efforts. Next, please.

So the framework is broken out into five different milestones starting with establishing your inventory and developing a scope of work for the plan to identify what you really need from this plan to be able to get buy-in and set yourself up for success from an implementation standpoint and then guide you all the way through developing that defined plan and encouraging that ongoing implementation and revisiting of the plan. I'll go into a little bit more detail into each milestone, but there are webinars and resources available that goes into this in more detail. Next, please.

So, with milestone one, it's really about establishing inventory and the scope of work. What I find really important from the implementation perspective here is the element of identifying your stakeholders. So, understanding who needs to be involved in developing of this plan and understand that this is a plan that will

be implemented, that will need to be implemented. So, we need to make sure that the folks that are going to be involved in that implementation are a part of the planning process and this includes facilities management, capital planning, procurement, funding, all these folks that are going to be responsible for implementing the plan. It's really critical and key that they have that buy-in as part of the development process of the plan. Another element is really on this evaluation criteria. So, making sure the organization understands – is able to define what their values are and define what successful pathways might look like from their perspective. Next, please.

So, in milestone two, this is where we look at categorizing the portfolio. Really understanding that there is a wide variety of buildings in many portfolios. How might they be separated? Really understanding whether – which of your buildings have different HVAC systems? If you're a national organization, understanding which buildings are within each climate zone which really might relate to different or might result in implementation of different technologies. So, these are different ways that we can slice and dice the portfolio. One really important element here in terms of implementation is really doing this benchmarking. Identifying what are the opportunities on a per building and intervention level, and which buildings to focus on more. So, this can be done as part of categorizing the portfolio, identifying these representative buildings. There are also a variety of other technologies and emerging technologies where you can assess building portfolios at scale through AI, through machine learning, to allow you to identify opportunities at the building level to explore in more detail. Next please.

So, milestone three is where we look at assessing the measure. This can be done at both – we encourage this to be done at both the building level and the portfolio level for different types of approaches. We do have a companion emissions reduction audit checklist that you can refer to for more information here. The importance of this from an implementation standpoint is really getting to the discrete measure where you might have the greatest emissions reduction opportunity. Each building is going to have a different amount of baseline emissions, different amount of potential emissions. So, it's really important to get in there and start assessing these buildings in order to really identify these policies, and projects to be implemented. As part of this, we really do encourage folks as you identify opportunities in this milestone, start looking at how can you implement now. I've seen some organizations frame it as no regrets. So certain projects you might

consider regardless of where things shake out from a planning perspective. We're always going to need to convert to LEDs. It's always going to be a good idea to do retro-commissioning in certain buildings. So really want to make sure that we don't see planning as hindering implementation, but really providing the context that you need in order to ensure that the projects that you'll implement are enough to achieve your goals. Next, please.

Next, we look at in milestone four, we really look at developing these scenarios. This is looking at how can we apply these emissions reduction measures, and how can we scale them up at the portfolio level? There's a variety of different ways we could provide – develop these scenarios. This could be looking at do we pull the – a lot of times we think about these as levers. How far do we pull the efficiency lever, the electrification lever, on-site and off-site renewables? So really encourage people to use this as an opportunity to kick the tires a bit, to say, “Well, what are the different ways we could achieve our emissions reduction goals?” That can be evaluated based on those evaluation criteria. I think the importance here is that a lot of times you want upper leadership to feel and to acknowledge that you have made these commitments to either carbon neutrality or another decarbonization goal, and at this point, we're just trying to find the most – the best pathway for your organization. It could be based on the most cost effective pathway, least disruptive, a variety of different – often a combination of different evaluation criteria, but really the framing needs to move from beyond what are the projects that will get us a three-year or five-year payback to what are the set of projects – what are the set of measures that will allow us to most effectively meet our committed goal? I think that framing helps a lot of things fall into place. As part of this, we look also at developing that implementation phasing. What are the types of measures you might do in the short-term, medium-term, long-term? How might you implement these? Is this going to be done at a per-building basis? Is this going to be involved as part of renovations? Is this a measure-based implementation approach? We really encourage folks to explore the different ways you can achieve your emissions reduction goals in this milestone. Next, please.

So finally in milestone five, we assess these scenarios and identify the pathway based on which one best meets the organization's needs. Then looking at really how do we update these existing standards? Instead of trying to carve out all these individual projects that need to be implemented separately on their own, what do we do to incorporate these into the existing organizational activities to achieve this natural decarbonization? This is when

we're doing renovations. What do we need to be doing to these buildings in order to encourage electrification, efficiency? Obviously, on the new construction side, if we're building new buildings, we want those to have as little of an impact as possible. We have enough buildings that we need to decarbonize. Let's try and reduce our impact here. Then, different other standards as well. Finally, we're looking at how can we define phasing and financing and really developing this work plan and assigning responsibilities, which is really important. Next.

Finally, we have the wedge chart, which we all love. But the difference here is how can this be built up from individual projects and measures in order to understand what your pathway will be? Next.

Just a few lessons learned from my experience developing climate action plans. On the owner side at the University of Illinois and San Diego State University as well as implementation on the latter, really encourage you to emphasize the highest impact item. So, there's a lot that can be done in the broad umbrella of climate action. But really, if you're trying to meet these really aspirational goals and goals that need to be set and need to be met, really need to focus on what are these highest impact items. Really encourage assignment of implementation both the individual and departmental responsibility at departmental level. Seen some really good success at the city level of pushing the specific implementation plans to these departments to encourage that they're the ones that set their capital budgets and ensure implementation of specific projects. I think that is really helpful. Oftentimes, these offices of sustainability or energy might have one – two – three people. How can we spread this out? On that, how can we identify additional staff that might be required? I really encourage folks to think outside of your own department as well. It's one thing to identify projects, another to fund these projects, and it's a whole 'nother thing to make sure these projects are implemented. So, do we need more resources in project management or procurement in order to ensure success of these projects and make sure they get the priority that they need? On that note, looking at how do we prioritize is based on building and intervention levels. And then there's looking at again, how do we take advantage of what's already happening at the organizational level? So, make sure you're aligning with any broad institutional plans, comprehensive campus plans, as well as asset management. These are great opportunities, facilities condition assessments, things to be able to leverage of those and add a little bit on the decarbonization side as well. Obviously, as we saw from the polls,

we need to identify acceptable funding pathways. Getting familiar with what those pathways might be and getting buy-in from the institution and which ones are acceptable in your situation. Next.

So, thank you for that. You can contact me at my email address here. And we're going to jump in now to a couple more polls. So, if everyone could please go again to Slido.com. Enter the event code #DOE. So, we're asking now where is your organization in your decarb journey? Are you currently developing a climate action plan? Have you completed one? You have a – are you developing a more detailed implementation plan, an emissions reduction plan? Or have you completed one? Or are you really not at the planning phase? Are you really just doing opportunistic projects and focusing on that aspect of it?

So, we certainly have a plurality of folks who are developing the climate action plan right now, and a good amount of folks that really don't have a plan or are working on one at this moment, but the opportunistic project implementation. We also have a good chunk of folks that are now developing a more detailed implementation plan. That's great to hear. We also see – we've got 12 percent now who have completed a climate action plan, and a handful of folks that have completed an implementation or detailed emissions reduction plan. All right, so we'll move onto the next one. Feel free to keep filling that one out. That one, we're really trying to understand where you are in the implementation process. So, are you fairly early? If you have a plan, it's you're in the first year or so after – first year of implementation, more intermediate stage where you've executed these strategies, a handful of really impactful ones, or would you consider yourself advanced or you've made significant strides towards implementing that plan and towards achieving your goals?

All right, great. Well, it looks like most folks are still early yet, and we're here to support you on that journey if you're interested in joining the Better Climate Challenge. Bri?

Bri Colon:

Wonderful. Thank you, Tom, so much. I appreciate that. If folks do have additional questions on those resources or ways in which to engage us further, whether it be the Climate Challenge or opportunities throughout for decarbonization planning through Better Buildings, please don't hesitate to reach out. I'm going to go ahead now and pass it on over to Greg to talk through his information and the Tale of Three Campuses here, Greg. I will pass it on over to you. Thank you for joining us.

Greg Farley:

Great. Well, good morning, everybody. Thanks for being here. I want to shout out to the folks I see in the participant list who are working with George Mason University on our current energy efficiency planning process. So, thank you all for being here this morning. Bri, if you could kick me ahead two slides. We'll skip that one. Blah blah. Okay, so I want to talk about three institutions that I've worked for this morning and sort of where we started our decarbonization and energy efficiency journeys, what our motivations were, and try to draw some common themes together from those three. George Mason University is a large publicly funded institution. We're the biggest university in the Virginia higher ed system. Washington College is in eastern Maryland on the eastern shore. That's a small, liberal arts college, about 1100 students give or take. Chesapeake College is a small, regional community college over there that also has – community college enrollment fluctuates a lot, but you can think of it as between 1,000 and 3,000 students in any given year. So, I'm going to start by talking about George Mason and our current ongoing planning effort. I think it's the best example of planning I've seen across any of these institutions, but then I'll compare and contrast with the results that we were able to get at both Washington College and Chesapeake College on both energy and decarbonization. We'll just compare and contrast the planning process and the execution. I think one of the things we're going to keep coming back to is you heard Tom say in the last segment that institutions probably should think about – start looking for projects you could implement right now. That's a really common theme everywhere I've been. It's certainly going on at Mason. It certainly was the beginning of our journey at two other colleges as well. Next slide, please.

Thanks, Bri. So take-home from this slide – George Mason University is basically a small city. We're 40,000 students. That's combined graduate and undergraduate this year. When you throw in faculty and staff, we're almost 50,000 people. That's spread across three campuses, but the big one is in Fairfax, Virginia. It's almost 100 buildings. There is a district natural gas fire and hot water plant, and a district electric chiller plant that supplies high temperature hot water and chilled water to the campus. So, our decarbonization efforts really to date and any of our efficiency efforts have focused on work at this campus with the exception that our science and technology campus which is in Manassas, Virginia, has a much higher EUI campus-wide than either of the other two campuses do. It's smaller. It's only eight buildings, but it's mostly lab buildings, and the energy use intensity is really high on that campus. So, we've also started some work on that campus as well. Next slide, please.

I won't belabor the point about what my team does. That's the left-hand column. We work really broadly across triple bottom line sustainability. We work alongside our energy team. The energy shop actually works in facilities management. We have a really good partnership with them. And just over the long term – I've been with the institution about four years now, but the long-term story for George Mason has been that it's been really hard to get energy efficiency projects, much less energy generation or storage or any of that to pencil out, because we're on a state contract for electricity and it's been very inexpensive. So, we've been able to lean into that and make good fiscal decisions. But now in an era of a climate crisis or as some of our students and faculty would say a climate emergency, we really know we need to reexamine our stance, and changes in utility pricing over the past couple of years have also made that a little easier for us to consider. There is a 2010 climate plan sort of in place. It was adopted by a previous administration. Written by a team of faculty and students, but very little progress has been made against that plan, mostly because it was very conceptual. Didn't include any direct detailed how-tos. We have done a lot of outdoor lighting retrofits. We have actually just rebuilt our hot water and chilled water distribution lines on the campus and then reinsulated those. We have been working towards efficiency, but in the grand scheme, our efforts on carbon have been very soft. Next slide, please.

You can see that here. In the period between 2015 and 2018, you'll notice our electricity use actually peaks in fiscal year '18, and then begins declining a little bit. Note that in the calendar year – sorry, fiscal years 2020 and 2021, you're seeing a really strong impact of the COVID pandemic. We basically shuttered our campuses and did a lot of teaching from home in that time. Even so, our electricity, our scope two emissions are in decline. Notice the decline between 2021 and 2022. That might be a straight line, or it might be a decline, but we're working with our utility, our Dominion Energy Virginia. Their supply is actually getting much greener. The passage of the 2020 Virginia Clean Economy Act mandates they start to increase the renewable energy in their supply. At the same time, our natural gas use is definitely on an upswing after the COVID pandemic. So that's a place we could stand to improve a little bit. Next slide, please.

We are currently engaged with an outside contractor – Glumac. They're from California – to draft an energy efficiency and resiliency plan into which are baked some long-term climate goals. We need to sit with our community and define what we mean by

carbon neutrality. Students throw that out and it's "Wee, we're going to be carbon neutral" but we don't really know what that means. We're trying to develop a definition that works for us. Anything we do is going to start with efficiency because that's just the most logical place to start. Next slide, please.

Because our district heating and cooling plant touches a majority of the buildings on the Fairfax campus, this is obviously a big target for us. Almost 100 percent of our natural gas use is here, and then we have already done some things to make this more efficient. In addition to that rebuilding and reinsulating the hot water and chilled water loops, we've also revised temperatures upwards for the chilling loop and downwards for the hot water loop. We're thinking about things like heat recapture and ground source assistance, groundwater heat pumps that might help us with this. It's all very much in the planning stages right now. Next slide, please.

What we have done is we have embarked on a – again, this is that "What can you do now?" philosophy. We've embarked on a series of strategies that have allowed us to bring our electricity use down and, in some ways, I think we've mitigated our thermal use as well. Happy to talk about this in more detail later on. Important to note, the drivers here are principally energy savings and climate and carbon. It depends on who you talk to. Our students and our faculty really think climate and carbon is driving a lot of this, but if you talk to our CFO and our facilities team, that's important, but we're also looking for energy savings. I want to move on from here to next slide, please, Bri, to Washington College just really briefly.

I think I've covered most of this. Very small, a lot of very small buildings. Some are very historic, some on the National Register. Like most small colleges, was facing a certain degree of financial stress related to enrollment, demographics, pricing, and competitiveness in the higher ed marketplace. When I was hired by Washington College, my mandate was to find my salary and benefits package. So immediately I went after utility savings as a long lever for doing that. Next slide, please.

What we ended up with at the end of a two-year process was an energy as a service project. It started as a development of an SCO. It's driven primarily as a finance tool. We have a lot of older and poorly maintained infrastructure, and a lot of equipment that needed replacing or extensive repair. We also had buildings with no dedicated outside air, buildings with facilities condition

assessment scores that were indicative of a lot of repair as a need. The investment firm – this is with Fesco Energy Services. They brought \$25 million dollars of funding to the table. The college was able to find enough funding to complete some building renovations that helped augment what the energy as a service agreement did, but at the end of the day, the big wins for Washington College were \$1.2 million dollars annually in energy savings if the energy services contractor is correct with their calculations. Then an 82 percent reduction in scope one emissions. There's a whole bunch of strategies involved in that, and again, I can take questions offline about how we did that 50 percent reduction in electricity use, and a near 50 percent reduction in fuel oil consumption. So, this is a big win for finance. It frees up about \$1.2 million dollars a year for the college which relieves a lot of their business stress. It's really good in terms of their carbon and energy report. Next slide, please.

Finally, I just want to talk about real energy leadership for a region. Chesapeake College is a small community college. It's a very small campus – 12 buildings. All of it is electric. There is no natural gas. So, there were a lot of levers to really pull on here to really change the energy profile. This is – our projects were motivated from the drop by fiscal stewardship. As a community college funded by five rural counties, there are always deep concerns about budget, but it was my job to introduce sustainability thinking to the institution. The projects that we were able to contribute – you can see a panoply of them here. We did a lot of lighting retrofits. We carved about 24 percent out of our electricity bills. We installed solar PV at scale. We built a high-performance LEED platinum building. Put up a small wind turbine. That later took a lightning strike and we had to take it down. That's another story. Again, you want to talk about that one offline. We also worked with our utility to install battery and microgrid dispatchability to a particular building. Next slide, please.

Again, this set of projects really was a great example of how a single institution can show how this can be done with an eye mostly to fiscal stewardship, being a better steward of public dollars, but with an eye also to addressing student and faculty concerns about carbon and climate. So, I'm happy to take questions afterwards, but I think that's all I've got so I'll turn it back over to Bri.

Bri Colon:

Thank you so much Greg. That was wonderful. And a lot of lessons learned too from those three campuses and your roles

there. Especially hitting on what you can do now, the importance too of efficiency first as a crucial cost impactful strategy to decarbonization. It's definitely key. It shows the importance too of planning – the differing types of planning in those unique regions. The differing characteristics too throughout those different universities is really key to exploring through a variety of different diverse portfolios broadly, which higher ed is as we know like that small city, as you mentioned. Thanks so much, Greg. We will turn it over now to Cory. Thank you so much, Cory. Thrilled to learn more about the work in leadership going on at Boston Medical Center. So, I'll turn it over to you.

Cory Pouliot:

Great. Thank you very much. Again, my name is Cory Pouliot. I'm the Senior Director here of Facility Operations and Utilities for Boston Medical Center. If we can jump to the next slide down to the agenda.

So, I'm going to talk to you a little bit more. I'm going to introduce about Boston Medical Center, what we've done, how we've really been leading the way over the last ten plus years in reducing our carbon footprint and looking at sustainability options and programs that we can implement here at the medical center. I'm going to talk a little bit more – I'm going to be a little bit more focused in my time whether you're talking about some of the challenges that we faced in actually implementing some of these projects that we actually did on the campus, dealing with our utility providers and the municipalities that we have to live and work in, some of the communication issues, and then how we can find best practices, and resolve some of these communication issues and what we found that worked really well going forward. Hopefully will be of benefit to you and some of your projects as you go forward, and then just wrap things up. So why don't we go to the next slide?

So, Boston Medical Center, I'm just going to give you a little background about us. We are located at the south end of Boston in the Roxbury area of the city. We are the largest safety net hospital in New England. We're a little over 3 million square feet. We run the busiest emergency department in the state. We have the busiest trauma department in the state. We see roughly about 1.3 million outpatient visits a year. So very, very busy, busy facility here. Next slide, please. So, a little bit more about us. We're the number one socially responsible hospital in Massachusetts. We're ranked number four nationally by the Lown Institute that looks at all the individual hospitals out there. It's not just what we're doing on sustainability piece, but what we do collectively with our community around racial issues and equity and justice programs

that we implement. Very proud of that. We also chair – Boston has a Green Ribbon Commission which we’re going to talk about a little bit more a little later on. We have – our president here actually chairs that. I attend most of those meetings when we have them, but it’s an opportunity for large energy consumers like us and our peers as well as the utilities to get together and have some very frank, very honest discussions with each other and talk about topics that we can get together on and move forward with. Our sustainability portfolio – over the last several years, we’ve issued several green bonds, \$200 million dollars. Just last year, we were the first healthcare institution to issue a sustainability bond, which the interesting fact is we put the bond out on the street for \$232 million. Interestingly enough, the bond was nine times oversubscribed meaning there was about \$2 billion dollars of sustainability bond money available to us, which of course we didn’t need, but that’s to tell you what kind of funding is available out there today and if you’re looking for it. Then we also are championed with the Greenovate City of Boston program which helps and champions and implements the city’s goals of becoming carbon neutral by 2050. We’ve been an active participant in that program for many, many years. Next slide, please.

So, a little bit about us and what we’ve been trying to do with our energy reduction, because that’s really what we felt was our first steps. We really need to get a handle on our campus and really look at how we can reduce our usage overall before we then start looking at trying to become more efficient and then look for additional cuts. We installed, about five years ago, a two megawatt co-gen plant. That provides enough power and electricity to our inpatient areas, which has been very helpful to us. Another topic for another time would be how do I get away from the natural gas piece because that’s always been a challenge. But by doing that and looking at where we can cut and becoming more efficient as a healthcare provider, we’ve been able to find about \$10 million dollars in energy savings which has allowed us to put that money back into our patient care areas. About almost – just under 20 percent energy reduction between 2011 and 2021. We have a carbon neutrality goal of 2030, which I think we’re going to beat it by about two or three years. Next slide, please.

We were initial investor in our Summit Farms location which is a 650-acre 60 megawatt solar field at the time. In 2016, it was the largest in the country. We partnered with MIT and some other investors here in the Boston area to push this program through. We buy 26 percent of the output of that farm which helps provide 100

percent offset for our electricity usage here on our campus. Next slide, please.

And another program that we've implemented that we've been pretty proud of is our rooftop garden. It's relatively small. It's just under 3,000 square feet. We grow roughly about 25 different types of crops. We can rotate out two to three times a year based on the variety of crops we're growing, but more importantly is the output of this farm. We're pushing out just a little over two and a half tons of fresh produce that we use in our food bank. We use it in our cafeteria and dining areas, and we use it as part of our nutrition program where a nutritionist will write out almost prescriptions for our folks. Next slide, please.

This is where I'm going to talk a little bit more about some of the challenges. We looked at things like PV. This is a PV project that we had. One of the challenges that we faced with PV projects is interconnection and a lot of people may or may not know what that has to deal with, but interconnection is really tying into your local utilities. There's two phases with interconnection. These are important because you need to understand before you embark on a project like this – is you need permission to install and permission to operate from your utility providers. Because the last thing you want to do is get into the middle of a project that you have not received that, nor invest the funds to go forward with a project that you may not necessarily be able to put onto the grid. Next step.

A little bit more about interconnection. What is interconnection? Basically, that is really your utility provider coming in and looking at your program and being able to size it up to see how that would connect and work with the local grid infrastructure in the local area. Why is interconnection important? Because they really want to make sure that the equipment and the way your system is set up is not going to put undue burden onto the electrical infrastructure or jeopardize some of the safety systems that they already have in place. So, it's really important that they come in and really evaluate your system. Part of that process is making sure safety systems are in place. Can they absorb the additional electricity? If you're using a net metering program, can that absorb the additional electricity that you're putting out into the grid? How much does this interconnection cost? Depending – it's all size variant. Depending on the size of the system you're putting in, it could be very inexpensive like on a residential building, all the way up to say an industrial utility size – many tens of megawatt systems. It could run into millions of dollars, and there's certain things in there depending on your local utilities and your state, depending on

how much that can cost and where you may be going from. The interconnection again is size dependent. It could take as short as a month or it could take as long, as we found out in some cases, almost close to a year depending on the size of the system. Next slide, please.

I want to talk a little bit about new technologies. Again, it's not really new technologies, but battery and storage systems. Start your conversations early on with authorities having jurisdiction. Basically, your local fire department. We ran into a problem on our site. We had originally pulled the permit to install a Tesla Megapack. It sat for about nine months. The local fire department pulled the permit because they wanted to evaluate battery strategies across the system. Nothing we did wrong, but it was something they wanted, so we had this Megapack sit there for nine months without being able to utilize it. So have those conversations early on with them. Talk about the permitting process. See if they have any issues or concerns with it. Next slide, please.

We also want to talk about with these communication challenges, lack of cross departmental communication. That has to deal with dealing with your utility companies. Most of us have a representative we deal with all the time, but they're not the decisionmakers. They may not run the – they most likely are not running the interconnection group. So, you want to make sure you're talking to all the players involved. You may think you know who they are but check with folks and make sure you can confirm that. Stakeholder engagements – double check with the utilities and find out what additional resources. If I'm adding a power station or PV to my buildings and I'm producing a lot of extra energy, what's going to happen to the area? Is there going to be a need for transformers coming in? Am I going to need space for that? Am I going to have extra conductors going in under the ground? What impact is that going to have? Then build public support. If I'm putting in a battery station, I definitely want to be able to make the community be aware of it so it doesn't come up and bite me afterwards. Next slide, please.

Then again, some best practices. You want to be inclusive with your projects. You want to have a clear communication plan. Training, and understanding the capacity of the program, stakeholder awareness campaigns. Again, you cannot go wrong. This is something that we worked with with the Boston Green Ribbon Commission. We worked with our utility entities, let them know as our projects go forward exactly what the impacts are

going to be to minimize any delays or problems in that project turnover. And hold regular project coordination meetings. That's going to be very important. You want to keep everybody up to date in the process of the project so there are no surprises that sneak up afterwards. Next slide, please.

Again, every project is going to be different. They come with their own challenges. There are going to be things that you've not encountered in the past as you do these projects, but you want to be open and if you've taken steps ahead of time to build that team with your local utilities and your local municipalities, it's not going to be a surprise. People are going to be working with you together to get this done. It's going to be important for everyone to succeed. Again, know who your stakeholders are. Again, that could be individuals within the city. I may be working with the fire department. One day I may be working with water and sewer. I may be working with highway division because I may have crossing locations and things of that nature. So, you want to know who they are. Start that communication process very early on in the project. Establish regular path of communications. Make sure when you have your meetings, there's minutes for people who cannot attend. You want to make sure that you have regular updates for everyone to be involved and have an opportunity to voice their questions. Lastly, be clear with your expectations. Ambiguity will end up – what ends up catching you in the backside of the project and you'll have to deal with that if you're not very clear with what your expectations are. Next slide.

That's it. Thank you very much.

Bri Colon:

Thank you very much, Cory. Appreciate all that information too, the work, and lessons learned, and challenges that you experienced at Boston Medical Center. I think that was really helpful to understand a holistic view of those impactful decarbonization strategies that you all have embarked on implementing in such an important landscape, and thinking through those lessons learned whether it be through different strategies such as PV connections, for example. So next in our last few minutes, I should say, we're going to transition into Q&A and a big thank you again to all of our panelists for speaking so far. If folks want to join us in Slido if they haven't already at www.Slido.com and input any questions, we'll go ahead and switch over to transition and be able to ask our panelists here a few questions. If our panelists want to come on camera for this portion, we'll go ahead, and I want to start off here. For one of them that rose up, and I think is applicable too for a lot of folks and our panelists too, I think Cory was just wrapping up

speaking to the importance of bringing in stakeholders. So, I think it really dovetails nicely into Tom's note about milestone one around when to bring people in, when to bring them into the table through that process. So maybe we could start there too. Then I'd be interested to hear from each of our panelists their experiences with this, and maybe the successes and again, maybe challenges too they've experienced in terms of garnering that buy-in. So, starting with Tom first here. Tom, do you have any thought on an ideal time and what that looks like in thinking about it strategically?

Tom Abram:

Early and often broadly. But certainly, encourage you to identify your broader team of both planning and implementation. I think it could be helpful as part of the work planning process, especially if you're working with consultants or even if it's all in-house, identifying early milestones where you might want to do check-ins with certain folks. I'd say on the specific question around bringing in financing staff once solutions have been identified, I'd almost think about being a bit more proactive too. In some cases – a lot of it's iterative. It's identifying what are the types of financing opportunities you might have, which might allow you to identify specific solutions, but I think it's helpful to have these more frequent conversations. One last parting thought is don't expect every stakeholder to be engaged in every part of the process. So, if you're looking for feedback, the little tool I tried to ask everybody at SDSU who was involved or I thought might be involved, "Here's the draft plan. Please review it and give me feedback." Crickets. I took individual pages, extracted PDFs. Literally one or two pages. "Please review these two pages. The full plan is available here if you want to look at it for context." I got an incredible amount of feedback from stakeholders. So really understand that everybody is stretched for time regardless of how interested they might be in this topic. Make it easy for them.

Bri Colon:

That's a great point, Tom, too. Handing someone like a 60-page document might come with crickets there. *[laughter]*

Tom Abram:

A hundred.

Bri Colon:

Getting to a hundred, yeah. That's a great strategy. I think continuous engagement is definitely key. I'm curious too, Greg, from your perspective, I know you shared the Tale of Three Campuses there. How you found maybe some strategies too in bringing folks to the table and really exemplifying that collaboration?

Greg Farley: Yeah, we've actually done I think a really pretty good job of that here at Mason. The number one tool that's been really useful for us has been online town halls, believe it or not. So, some of this started during the pandemic. That was the only tool available to us, but we've had pretty good response to those. The other thing we've done is set up small discussion forums that are targeted by topic and invited particular stakeholders, whether there were certain student groups, or certain researchers or staff groups that had expressed an interest in those, community groups. Not to talk about the whole thing, but like Tom said, we pulled one or two pages out and said, "This topic is going to be under discussion. We think this might be interesting to you. Come help us understand what we need to know from you about this." Certainly, I think we had pretty good success as well.

Bri Colon: Definitely. I think creating that and really leveraging that lively campus community is key there. Thanks for sharing, Greg. And I know Cory, these were a lot of the highlights you were sharing there towards the end. Is there anything else you'd want to share in terms of Boston Medical's experience or in similar roles that you've held that you found successful in this?

Cory Pouliot: No. Every place has similar challenges. It's not different whether I'm in higher ed or in healthcare. They both use very energy intensive locations. I did see that there was one question about the difference between a green bond and a sustainability bond. Sustainability bonds are more towards exactly sustainability-based projects. I'm sorry green bonds are more based towards sustainability-based projects whereas sustainability bond is more towards a green and social program event and projects as well. So, they're similar but a little different.

Bri Colon: Sure. Definitely nuances there. Thank you so much, Cory. Thank you so much to all of our panelists too as well. I know we're at time here. We'll just close up here with a few notes. Thank you for the questions. We'll go ahead too for the remaining questions, share a handful with our presenters too after today's presentation and make sure we get some select answers too for you all for questions that we weren't able to get to. Just to close here, I did want to mention you found one of our webinars in our series here today. This webinar is a part of that. If you do have additional interest, our full lineup for our webinar series is available at our website. We have a great slot of presentations through March and so please visit our Better Buildings Solution Center to learn more and register for those. Our next webinar, if you go to the next slide is on February 6th and will be all about refrigerant. So, Look into

the New Cool – the transition to low global warming potential refrigerants and natural refrigerants. So, we'll look into how folks can comply with regulations around hydrofluorocarbon phasedowns and how that affects technologies in commercial buildings in particular. If we go to the next slide.

Come one, come all to our Better Buildings Better Plants Summit occurring in D.C. April 2nd through the 4th. That website listed there has everything under the sun for Better Buildings. We're excited to really convene and engage folks, industry peers, and experts on a variety of different topics all related to Better Buildings and Better Plants. So, our session tracks have been published if you're interested in taking a gander there. We look forward to seeing you there at our Better Buildings Summit. Next slide.

If you haven't seen our next episode of our Better Climate Challenge Roadshow, another great opportunity to learn more about climate challenge partners and climate planning in a variety of different sectors. So please enjoy those partner stories from industrial partners Cleveland-Cliffs, the City of Cleveland, and Cleveland Clinic, another healthcare partner, in learning how they're making headway in their emission reduction strategies that they're embarking on. If you go to the next slide.

With that, I'd like to close and thank our panelists again for taking part in today's webinar. Please feel free to contact ourselves at the program and our panelists as well with any additional questions. I encourage you all to follow our Better Buildings social media platforms. We're on X, formerly Twitter. We're on LinkedIn. Everywhere you can find social media, we're posting updates and sharing great stories and compelling stories from folks like our panelists here today. So, you'll receive, again, an email with today's recording and slides and transcripts when those are available. Thank you all again for joining in our virtual audience. I hope folks have a great rest of your day. Take care, everyone.

[End of Audio]

Additional Speaker Q&A:

Better Buildings does not endorse or recommend any product or technology provider. The answers in this document are solely the opinions of the speakers based on their professional knowledge and experience.

Additional Questions

- Audience member:* What was the most difficult attitudes by the utility you experienced about providing an interconnection to the grid?
- Greg Farley:* My experience has been that utilities are not eager to engage with renewables or storage. That's changing, especially as RPS standards proliferate and laws require it, but distribution grids generally aren't set up for large-scale integration of "new" technologies - so there are valid safety and reliability concerns. Plus, renewable generation is a threat to the financial model that utilities rely upon. Where I have had the most success working with utilities, I've been able to build partnerships based on mutual benefit - "help us help you figure this out!" sorts of conversations.
- Cory Pouliot:* It all depends on the individual utility provider when it comes to interconnection opportunities and challenges. Within our portfolio we predominantly deal with two electrical providers. One is much better to deal with than the other. It is important to start dialogs with the Interconnection departments early on in the project. They will be able to provide information and insight to avoid issues that may come up later in the process.
- Audience member:* Did you have to engage an electrical contractor that had experience dealing with large-scale projects and not just typical electrical work; i.e., residential, small commercial, etc.
- Greg Farley:* Yes. Because our main campus is so large, we needed external help to design a robust energy efficiency effort.
- Cory Pouliot:* Depending on the size of the project, I would start with a consultant or engineering firm that has experience in that type of work.
- Audience member:* Can the panelists provide rough numbers on the cost per kilowatt hour (in cents) in each case.
- Greg Farley:* George Mason University - historically, about \$.08/kWh, but now \$.105-\$.110 all-in. Our bill is heavily impacted by demand charges. Washington College - multiple rates at different campus sites, but all-in around \$.012/kWh, if I remember correctly. Chesapeake College - I don't recall.

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- Audience member:* Organization has a carbon -neutrality goal but no plan - how to move upper management towards a comprehensive plan
- Tom Abram:* I would raise the need to develop a plan to ensure that your carbon neutrality goal will be met. Pull together historical emissions to show the trajectory of business as usual. If you aren't on track to be able to achieve your goals with opportunistic projects, you will need a more serious investment in your decarbonization efforts. This translates to costs for the organization. In order to be a good steward of organizational resources, it would be wise to develop a comprehensive plan to identify a decarbonization pathway that is most effective for your organization. When organizations with deep decarbonization goals like carbon neutrality get closer to their goals without making substantial progress, they can get pushed into strategies like RECs and carbon offsets. There is certainly a variation within these products, but they will all come at an expense with limited direct benefit to the building portfolio. Investment in energy efficiency, electrification, and renewables and storage can reduce overall lifetime cost, improve occupant well-being, and enhance resilience. But this level of investment requires thoughtful planning and alignment with upper management. You might also mention the importance of aligning climate/emissions reduction planning with capital investment, deferred maintenance, and other asset plans. There are a variety of plans with different levels of detail and cost. If budget is a concern, work with leadership to identify the most critical elements of a plan that would enable them to make decisions about implementation.
- Audience member:* What about challenging community engagement sessions? How to handle those?
- Tom Abram:* I'd encourage providing broader context around climate goals and the need to identify the best set of projects to meet those goals. I'd identify what the outcomes are for the sessions and encourage early engagement. It's helpful to provide an opportunity for feedback early on to signal that input is encouraged rather than provide a fully baked plan/project (assuming that the input is indeed encouraged!)
- Greg Farley:* We built those communications sessions into our contract with the energy-efficiency contractor; they brought expertise to the process.
- Cory Pouliot:* We work very closely with the communities we operate in. We hold several informational and Q&A sessions, so the community is provided all the important information about our projects and impact or benefits they may have.

Audience member: For milestone 4, what are some best practices for scenario planning and selecting the optimal set of projects? Are there any tools available in the market to facilitate this?

Tom Abram: One of the biggest recommendations would be to understand the magnitude of effort that will be required to effectively meet your goals. You might need to touch every building in some way to achieve your portfolio-wide goals. Scenario development is an important time to engage stakeholders, including leadership, to identify all of the different ideas team members have that might achieve your emissions reduction goals. This will help achieve buy-in and avoid questions like “why didn’t we explore x, y, or z” when you’re trying to select and define a scenario in Milestone 5.

I’d encourage understanding the differences within your portfolio and how different interventions might apply. There are tools/approaches that will quickly identify decarbonization opportunities with machine-learning or data models. One benefit of this approach is that it allows you to spend more time to prioritize and phase projects. This can be combined with building-level emissions reduction audits to understand a sample of representative buildings at a deeper level. I find it can be helpful to package these interventions based on implementation approach - building renovations, retro commissioning, equipment replacement, portfolio-wide measures (like LEDs), etc.

There are a lot of tools that are beginning to enter the market to support these planning efforts. We can’t suggest specific vendors, but there are a few related tools available through the DOE and the GSA that might be helpful:

[Software Tools | Better Buildings Initiative \(energy.gov\)](https://better.lbl.gov/)
<https://better.lbl.gov/>
<https://sftool.gov/>

Also, for partners in the Better Climate Challenges, we have developed a companion workbook to the ERP Framework to help explore potential pathways.

Audience member: Has there been a consideration of implementing ISO 50001 or Superior Energy Performance (SEP) certification for these institutions and if yes, how has that impacted the amount of Energy Savings and Energy costs?

Greg Farley: Actually, those certifications have not been part of the dialogue at any college or university I’ve worked for, and I’m not familiar with them in the higher-ed conversation. Higher ed can be a bit insular in this way - we have our own reporting organizations and our own mechanisms. I would advocate that we move to align with ISO or

SBTi or other common solutions, but in practice, higher ed has gone in its own direction.

Audience member: What part of the Scope 2 reduction was energy efficiency and onsite solar versus market-based grid purchases (RECs, VPPAs)?

Greg Farley: For George Mason U: none! The decline in our carbon emissions has been due in part to in-house “opportunistic” energy projects, like re-lamping, and in part to decarbonization by our utility (Dominion Energy Virginia, for all facilities except our Science & Technology campus, which is served by Northern Virginia Electric Cooperative).

Audience member: Any recommendations on how a public university could bridge the gap between capital investment and payback from investment tax credit when installing approved technology such as ground source heat pump or PV?

Greg Farley: It depends on the source of the tax credit. For Internal Revenue Code Section 179D rebates, we need to work with a contractor, and I think that’s also true for the Bipartisan Infrastructure Law incentives. In those cases, the contractor receives the benefit and passes it along to us in the form of lower project costs (usually). However, the Inflation Reduction Act incentives are eligible for “direct pay” for tax-exempt entities like universities and 501c3 organizations, so for those, we can claim the dollars directly. Frankly, we’re still working to understand the logistics of how direct pay will work for us. I know that some universities here in VA have already leveraged those funds; Mason is still developing shovel-ready projects that will qualify for those dollars. That’s a major goal of our energy efficiency planning effort.

Audience member: Have the anesthesiologists at Boston Medical talked about switching anesthetic gases to those which are clinically equivalent, but with a lower global warming potential?

Cory Pouliot: This is currently being reviewed by our anesthesiology team. We have had a couple preliminary conversations with the group and hope to have more traction over the course of this calendar year.

Audience member: Is Boston Medical reaching carbon neutrality with offsets or is there a plan to retire the Cogen system?

Cory Pouliot: This will have to be accomplished with offsets. The co-gen provides heat and power resilience to campus. Until we can find a better fuel supply for the co-gen (green/blue hydrogen or a synthetic mix) we will be utilizing the co-gen for the foreseeable future. Currently, the co-gen is roughly 72% efficient, which is much better than many of our local and district utility supplies.

Audience member: What was the name of the solar farm that is supplying the RECs for BMC? Was there push back from the community that it covered potential agricultural land?

Cory Pouliot:

Summit Farms

- The facility entered service in December 2016
- 60 megawatts
- Located on about 650 acres near Moyock, N.C. in Currituck County, N.C.
- Purchased from SunEnergy1, which developed and is the construction contractor on the project.
- Under a 25-year power purchase agreement with the Massachusetts Institute of Technology, Boston Medical Center and Post Office Square Redevelopment Corporation

I am not aware of any pushback from the community, with the development of the PV project and not using the land for agriculture.

3-2-1 Action: Transforming Climate Plans into Action

Additional Resources

Learn more about the topics discussed on the webinar by visiting the resources below.

Better Buildings Resources

- [Learn](#) about the Better Climate Challenge
- The [Framework](#) for Greenhouse Gas Emissions Reduction Planning: Building Portfolios
- GHG Emissions Reduction Audit: A [Checklist](#) for Owners
- Climate Action Plans and Emissions Reduction Plans Defined [Fact Sheet](#)

Explore more resources on the [Better Buildings Solution Center](#)

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