

*Nate Allen:*

Good afternoon, everyone. My name is Nate. I'm with DOE. I have 1:00 Eastern exactly. We'll start in about one minute.

*[Pause]*

I see our number is ticking up. We'll give it another 30 seconds or so.

*[Pause]*

Okay. My clock has just ticked over to 1:02. I see we have 120 folks here right now. I expect 125. I expect that number to go up based off of the registration list that we were looking at just before this call.

So anyone who has joined in the last minute or so, today's webinar will be recorded. It will also be archived then on the Better Buildings Solution Center. You'll receive a link once it's posted. All attendees are in listen-only mode, so please use the Q&A box on the screen, it's at the bottom of my screen, to communicate with us.

I think with that I've covered the housekeeping items, so I'll say hello and thank you for joining us for today's Better Buildings webinar about the portfolio emissions reduction planning work that we've been doing recently. I am really excited about today's webinar. I like to think all of our webinars are great, but this one especially so because it represents a milestone in our work with partners, and we have a new resource to share. So let's jump in and go to the next slide.

I will quickly introduce myself. My name is Nate Allen. I am a Program Manager in our Building Technologies office. I've been working with Better Buildings for about five years now, across the commercial and public sectors.

I am joined by my colleague, Hannah Kramer, from Lawrence Berkeley National Lab, and two members of our outstanding Technical Account Managers team. Both of them bring their own industry expertise to their roles. That's Tom Abram from Introba, and Stet Sanborn from Smith Group.

We have a lot of content we're going to cover, so let's go quickly here on to the next slide.

Our main topic for today is to review and share a new resource for emissions reduction planning at the building portfolio level. We'll go over the milestones and guidance within. Then Tom and Stet will engage in what I'm sure will be an entertaining discussion about the content.

In a moment I'll hand it over to Hannah Kramer to review this resource. I want to give credit to Hannah and Nora and Jessica and team LBNL who have done terrific work pulling this resource together. The impetus for the content is pulled directly from partners who helped us identify the need for this resource through our work together in the Better Climate Challenge.

Let's go to the next slide and talk briefly about that.

Almost one year ago exactly, about 51 weeks ago we launched the Better Climate Challenge as a new pathway within the Better Buildings' initiative. We are challenging organizations to reduce Scopes 1 and 2 GHG emissions across their portfolios within ten years. In the time since we've launched this new pathway, we've welcomed more than 150 partner organizations across the commercial, public, multifamily, and industrial sectors. The foundation of our partnership is to understand how best to help these market leaders to meet their goal, and do so in a way that produces information and resources helpful to others.

That leads me to our next slide. I want to talk about our working groups. Specifically, what we've been doing leads us to our call today.

Last spring at the Better Building Summit – and side note, I hope everyone on this call joins us this April for the Better Building Summit here in D.C. You'll get registration info at the end of this call. So last spring we launched a working group for emissions reduction planning. This was based on the feedback we heard from our partners about what they needed.

More 40 organizations joined this working group and have helped scope the content that you'll hear about in a moment. We are grateful for their involvement in that part. You can see the list here on the screen.

I think the last point I'll make on this slide, before I hand it to Hannah, is that this is first big resource that we've released as part of the Better Climate Challenge. Many hands, as you can see,

contributed to this work, as well as more that are listed in the beginning of the resource.

I think we have something that's very useful. We are really appreciative to the broad community, many of whom I see on our attendee list here for this call, that's helped get this to where it is, and we're looking forward to making a bigger splash about this resource at the summit this spring when the industrial sector complement its release. More on that later.

I was told to go quickly and take about five minutes, and I think I've done that. So, Hannah, I'm going to pass to you.

*Hannah Kramer:* Excellent. Nice job. Next slide please.

If you're familiar with Better Buildings, we use Slido.com to do the Q&A. So I'll be managing the Q&A throughout. Please go to Slido.com either on your computer or on your mobile device. The event code is DOE.

Put in your questions throughout. I'll be grouping questions. We have a lot of folks on the line today, so we won't be able to get through everything. If you put your name with your question, we can get back to you later, potentially, depending on how many we have. And you can select Thumps-Up as usual for the questions that you like. So I'll be managing the queue of those questions.

Next slide please.

This slide is really an overview of what we're getting at with the Portfolio-Level Emissions Reduction Plan. We looked at the industry and saw a lot of focus on climate action planning, and then also on building-level audits, mostly energy audits actually. Now it's morphing into emissions reduction audits. The purpose of the emissions reduction planning document is to give guidance on Scope 1 and 2 greenhouse gas emissions at the portfolio level for buildings and fleets of vehicles. So that's the niche we're trying to thread the needle on, and really a process framework.

So underneath that will be all sorts of tools, screening tools and protocols, a greenhouse gas inventory and tracking tools. What we're talking about is the process to get from your goals and your sustainability and climate action planning to the details of how you're going to execute that at the portfolio level.

Our target audience is commercial, multifamily, and institutional organizations. We really have tried to create a framework that sort of applies across the board in the commercial, multifamily, and institutional sectors.

I just want to mention a couple of the benefits of doing this kind of planning versus the alternative, which is create a climate action plan, engaging stakeholders and sharing your targets broadly across your stakeholders, and then diving in and doing a bunch of projects. That's what we actually have found that most people are doing. They really see the benefit of getting a lot of head start and getting those pilots out there, which is great, but it also doesn't give them the line of sight of what that's going to get them in meeting their 2030, 2040, 2050 goals.

The Portfolio-Level Emissions Reduction Plan really helps analyze multiple scenarios, identifies which strategies to pursue, and what sorts of early decisions might impact into those future 20-year-out scenarios. So it's giving stakeholders confidence that the organization can turn those ambitious targets that are communicated in your climate action plan into actually action.

I will also mention at the building level we've developed an emissions reduction audit checklist for owners. So this is a companion document to the framework for emissions reduction planning. When we get to that step in the framework, Tom and Stet are going to go and describe a little bit about the emissions reduction audit. We'll have a separate webinar just about the emissions reduction audit, because there's lots to talk about there on how to move energy audits into emissions reduction audits.

Next please.

This just is to also reiterate that we have tools across the board. They may be sector-specific. They may be performance tracking tools or ESG tools that can support this strategy.

In the review process there were sometimes questions about, "How does my tool relate to this?" Well, you'll see how the framework kind of unfolds and how it can be supported by many different kinds of operationalizing within the tools and protocols.

Next slide please.

All right. We're going to do a quick poll in Slido. So if you go over to Slido.com and enter DOE, we want to hear from you on

what items your organization has completed. This will be an interesting way to see where we're all at. Nobody has completed everything and it's always a work in progress.

So we have the greenhouse gas inventory, emissions reduction targets, your climate action plan or other higher-level plan, whether you've rolled out energy efficiency measures across your portfolio. LED lighting is just one of those kind of portfolio type measures. You many have done BAS upgrades. If you've completed one or more emissions reduction audits or decarbonization audits, which is a newer type of audit out there in industry, or integrated decarbonization throughout organizational policies. So do you have renovation requirements that require certain levels of decarb that require some electrification and things like that?

We're going to go over to Slido and give people a couple of minutes here – or probably less than that. We have a lot to cover today.

So we have a lot of folks have done energy efficiency measures across the portfolio. That has been our focus for so many years, this energy efficiency, and now we're adding things to it that makes it a bit more complicated, things like electrification, heat pumps and so forth. We have a lot of folks selecting emissions reduction targets. About half have climate action plans.

All right. You can keep answering this question. We're going to move on to the next slide. In the interest of time we'll leave that question open.

Now I'm going to transition over to Tom Abram, who is going to talk about the framework and how it kind of plays out in terms of the milestones that we talk about in the framework.

*Tom Abram:*

Thank you, Hannah. One of the challenges that we've seen organizations encounter is how to develop a decarbonization plan and emissions reduction plan at the portfolio level. Especially when there are large and diverse portfolios at play, it can be challenging to look at how do we translate the opportunities at the building level to the overall portfolio level and vice versa.

So what this framework does is it provides an approach to categorize your portfolio into meaningful groups of buildings, assessing opportunities in representative buildings within each of these categories, and then scaling these results back up at the

portfolio level. This allows you to develop scenarios and select and define a selected decarbonization pathway for the organization. By starting off at first at the portfolio level, zooming into groups and then individual buildings, and then scaling back up the portfolio, organizations can develop an actionable emissions reduction plan.

Next.

Within this framework for emissions reduction planning for building portfolios, we have five milestones that we've categorized the framework into. The first milestone is establishing the greenhouse gas inventory as well as the scope of the work for the emissions reduction planning effort. With the milestone, which you're based on the results, which is not surprising, a lot of folks already have greenhouse gas inventories, but we certainly want to make sure that this is a component that is included for organizations that have not done so yet, as well as establishing targets for the organization.

After developing the scope of work to identify what is really needed for the stakeholders to make a decision, we move on to Milestone 2, which is categorizing the portfolio. So this looking at what are the different key characteristics within the buildings. What are the ways that your groups of buildings and individual buildings differentiate from each other? And how might that lead to different decarbonization strategies?

After developing this category and selecting some representative buildings for future study, we move to Milestone 3, where we're assessing these measures, completing decarbonization audits and assessments at the individual building level, and then also looking at portfolio-wide approaches.

Moving into Milestone 4, we're developing scenarios where we combine the previous assessments. We look at phasing, financing options to develop scenarios for the organization to consider as their selected decarbonization pathway, which occurs in Milestone 5, at which point we also provide recommendations on how to define the plan even further.

Then coming from that is implementation. We know that many people are already implementing various decarbonization components, but we anticipate when there's alignment with this emissions reduction plan that we can see a greater success and speed and depth of decarbonization implementation.

Next please.

With Milestone 1, the high-level purpose is looking at ensuring that the organization's commitment to developing and implementing an ERP will be successful. So this is really trying to tease out who are the individual stakeholders, either internal or external. Who needs to be involved? What are their needs? What needs to be included in the emissions reduction plan development, to make sure that their needs are being met and that there can be buy-in at the organizational level?

Then we develop the greenhouse gas inventory, if this hasn't been done already, as well as the emissions reduction targets. Then we ask the organizations to define individual evaluation criteria, to really understand how will an organization evaluate these potential scenarios in order to select one that best meets the organization's needs, and further developing a scope of work that could be utilized either internally or in partnership with external consultants.

Stet, do you have any thoughts on best practices for creating this scope of work for any ERP, any pitfalls?

*Stet Sanborn:*

I would say one of the really important things is trying to build on efforts that have already gotten underway or content they have already developed. The whole process for defining the scope of work and really establishing your inventory can be overwhelming for folks that haven't started.

Now from the survey results, a lot of you have already sort of gotten to that level, which is amazing. For those that haven't, for that third that haven't gotten there yet, you'll likely have content within your organization that you can build from. So that could be even your facilities folks might have condition assessment reports that they have established for different buildings and different equipment.

That's a great place to start and build onto that as you develop your inventory list and start tracking down your utility bills and things like that. So definitely leveraging what you already have, so that you don't feel like everything within your plan is from scratch, because it's likely you have a lot of stuff already underway that you can leverage.

*Tom Abram:*

That's a great thought, Stet, and I think we can certainly look at – with this framework, it's intended to be able to provide an overview, guidance on how you would develop this emissions

reduction plan and understanding that there might be flexibility. There might be different needs for the organization, but this is the overall approach that we believe will lead to a successful development of ERPs.

One of the needs I see is really moving beyond some of these plans from the aspirational to kind of more of a commitment. So that really kind of relies on finding the right path and getting that buy-in from the organization. Any lessons learned on how you might best set yourself up for success in this, Stet?

*Stet Sanborn:*

I think you said it earlier and really well, finding those co-champions within your organization. This can be daunting from a task if you feel like you as maybe a sustainability lead for your organization have to do this on your own. Success will be way easier if you also can find your co-champions, and they could be within your work group or they could be even a property manager at a certain property. So finding those folks that can help you develop this will, again, build in that buy-in and get that critical mass of folks that you need to sort of be able to launch a project like this.

*Tom Abram:*

That's great. Next slide please.

Throughout the emissions reduction planning framework as well as this webinar, we show example figures and graphs, narratives around a hypothetical organization. So this is our first introduction of it here, trying to develop an example that is applicable to a broad set of sectors. We understand every detail might not apply to your portfolio, but in broad strips this generally applies to most portfolios.

One of the foundational steps in developing an ERP is developing those targets, which are informed by inventory as well as what's needed to achieve emissions reductions to address climate change. It's really important to set those targets and have that conversation.

*Stet Sanborn:*

I think I parallel with that, Tom, something that's really important, again, going with your co-champions and finding cultural buy-in within your firm, is making sure that you collectively are setting achievable goals and meaningful targets. So it's not just pulling something out of the air and saying, "Oh, somebody else did this. Here's my target. I'm going to do that, too," but finding the targets that really emphasize your corporate culture and some of those values that the firm has, again, will help get buy-in to this. So I



think that's a really important element to building that broad support.

*Tom Abram:* Yeah. I'd agree. I think the goal should really generate a sense of urgency. It should set action. I think that's also why having these interim goals as shown here, this organization has a 50 percent reduction target by 2030, which is aligned with the Better Climate Challenge. But we also want to make sure that you're set up for success, that you have the time to achieve deeper decarbonization, more holistic reductions, that you don't end up relying on some of the easier ways out that might not take as much coordination, but might not have as many benefits to the organization.

*Stet Sanborn:* Yeah. One of the other things, oftentimes when we're looking at, "Oh, by 2030 I need to hit this target," and it's hard to get momentum in a plan like this if that first carrot is ten years out or twenty years out. So one of the things the guide really does talk about is getting those first early sort of incremental wins. So our target may be 50 percent reduction or 80 percent reduction by 2040, but getting some really early wins and it could be actually based on work that you've just completed.

A lot of you guys are already deploying efficiency measures across your portfolio. Those are incremental steps into achieving these goals, so use that as a celebration of those emissions reductions as even a launch point for a broader emissions reduction plan. So you've already done it, celebrate it, again getting that cultural buy-in. Those incremental wins are incredibly important and it gives you that quick reward, so that people can start to see things are already happening so you don't risk losing that momentum.

*Tom Abram:* Absolutely. Next slide please.

Once we develop the ERP scope of work, the next step is Milestone 2, which is categorizing the portfolio. With this, the emphasis is really on finding what are the characteristic that might lead to different decarbonization strategies, different magnitudes of decarbonization opportunity, really breaking the portfolio down into more manageable pieces.

There are a variety of ways to collect and select these characteristics, which are those differentiators, which might include your greenhouse gas emissions intensity, total energy use, planned renovations, building type, HVAC type. There are a variety of different characteristics that you can utilize for this categorization.

It really can depend on what information you already have available and your specific portfolio. So I really encourage organizations to look at what is already available. Some facilities' teams might already have this information for a lot of these characteristics. Other organizations might opt to use other approaches, including automated building assessments or other approaches to be able to identify what those characteristics are and assess the magnitude of emissions reduction potential.

After we categorize and benchmark these buildings, we want to select some representative buildings for further study. They might be selected based on their absolute greenhouse gas emissions or greenhouse gas intensities within their respective categories or upcoming renovations. This really enables organizations to prioritize buildings that would benefit most for immediate implementation of the measures.

Stet, where do you see the benefits of categorizing the portfolio? How might that help you develop appropriate strategies for different buildings?

*Stet Sanborn:*

I definitely think it can help by breaking a big problem into small nuggets. It helps us get past that paralysis part. You might have an enormous portfolio across the country of several different building types, and to try to put a plan in place without breaking that down can be really overwhelming.

So this categorization process is really key to not only help you identify which measures might be able to scale really easily, but also just letting you focus a little bit on some achievable little nuggets that you can go after, and finding those shared commonalities, whether it's system types, et cetera, that might form a little cohort of buildings. That just helps break it down. Again, it's all about trying to build momentum, break barriers, and help you implement this broader plan.

*Tom Abram:*

Great, and we'll share an example of that on the next slide.

This is, again, our hypothetical example organization, looking at their 34-building portfolio. As shown here, the portfolio is categorized based on differences in the HVAC system types. So they have a variety of buildings that are sorted by different systems, district systems, individual boilers at the building level, and gas-fired package units.

Within each of these categories we're showing the greenhouse gas intensity, which is shown by the color, and the absolute emissions shown by the size. Each one of these rectangles represents one building in that portfolio.

Within this example we've got representative buildings that are predominately selected based on their higher greenhouse gas emissions and intensities, with considerations for upcoming renovations as well.

Next slide please.

With Milestone 3, we are then assessing those measures. The intent here is to look at opportunities for decarbonization at both the building and the portfolio level. Within these representative buildings we are performing emissions reduction audits and analyzing emissions reduction measures. This includes areas such as energy efficiency, electrification, both building and vehicle, fugitive emissions, and onsite renewable energy.

We also encourage organizations to select and implement measure packages at these buildings, while the results are being applied to the entire portfolio in the next milestone. The thought is that if you can solidify, if you can align on some of these specific measures, you can just move forward with those while the broader study is being developed.

In parallel to the building-level audits, portfolio-level emissions reduction opportunities are also identified and assessed. That might include district energy studies, fleet emissions, and green power procurement. Based on this step in the building-level audits, organizations can begin to develop portfolio-level policies and requirements.

Next.

In conjunction with the ERP framework, as Hannah mentioned, we are also developing a companion greenhouse – we have developed at Better Climate Challenge a companion greenhouse gas emissions reduction audit checklist for owners. This provides more guidance on how owners can approach building-level assessments with a focus on emissions reductions.

Next slide please.

So giving a little bit of a teaser for the emissions reduction checklist, some of the differences that we've seen, really the need is making sure that your audits are really aligning with your goals. Since the goals are to achieve emissions reductions rather than reduction in BTUs, for example, or something of that sort, the building-level assessments really should be using the same metrics, the same approach, making sure that what you're looking at at the building level is aligning with what you need to do at the portfolio level.

Obviously with the energy audits, a typical scope we often see energy efficiency and load reduction being studied and developing energy conservation measures. With the decarbonization audit, we also want to make sure that we're looking at electrification, EV charging, looking at fugitive emissions from refrigerants, as well as onsite renewable energy opportunities to develop emissions reduction measures.

Stet, can you provide some thoughts on why it's important to frame these building-level assessments as emissions reductions rather than traditional energy audits?

*Stet Sanborn:*

Yeah. I think one of the key things and the nuances when we're starting to focus on emissions reductions is making sure that we're taking in where you are in the country, which grid you might be on, your climate zone, because different efficiency measure will actually result in different amounts of emissions reductions.

In parallel to this effort, we know that building owners need to have something that they can follow to say, "What should we ask for?" One of the great things about this program is that we've been coordinating with ASHRAE as well. So there's a companion document for engineers out in the field for ASHRAE Standard 211 that will help them actually have the technical underpinnings to do these audits for you. So you have a list to check. What do I need to have done? And there's a parallel document coming out that's going to help engineers deliver what you need, so, again, trying to make action.

*Tom Abram:*

That's fantastic, great to hear that that resource will be forthcoming. Next slide please.

Next is Milestone 4. This is where we develop scenarios. Our purpose here is really to take what we found in the individual building audits and the portfolio-wide assessments and apply them to the portfolio level. The intent is to provide different scenarios,

different pathways for an organization to really choose and commit to a decarbonization pathway.

There are different ways to scale these results and to harmonize the results from the individual audits within the portfolio-level analysis. There are different approaches that look at the opportunity using data from the entire portfolio. So it really depends on what your organization's needs are. Certainly some means and methods for what the consultants might be utilizing. But it's really important at this stage to understand how you're going to facilitate that transition, which is why we also encourage developing some implementation phasing as part of this scenario development.

We also want to consider any potential changes in portfolio size. So this could be due to leasing schedules, new construction, acquisition, right sizing of the organization, so making sure that those adjustments and emissions are being considered as well.

By developing these multiple scenarios organizations can test different technical or phasing or financing approaches. There's a variety of different scenarios that an organization might want to look at in order to identify a pathway.

Stet, why might an organization develop multiple scenarios at this stage rather than identifying one specific pathway?

*Stet Sanborn:*

I think it kind of goes back to this common theme of getting buy-in from your entire organization. Each of us sit in our little spot and we might have a scenario that works best for our team, but overall, when you're trying to get something that implementable, that's actionable, we're trying to get buy-in from as many folks within our organization as possible.

Having multiple scenarios that you can compare lets each of us look at which levers we can pull and which scenario aligns best with the entire value chain for our corporation. So again, those scenarios give us options. Those options let us compare. Then we can really move forward and make it actionable.

*Tom Abram:*

Great. What I like about this too is there's a documentation of process of here are the scenarios we looked at. Somebody new comes into a leadership role in a year or two. They ask why didn't we look at this or that. Hopefully the idea is that there is documentation that shows there was thought put into this. Options were assessed and the organization can move forward from there.

Next slide please.

This is an example of the portfolio-level scenario development. So with this example organization they developed four scenarios to study. They basically adjusted how much they're pulling the lever of energy efficiency and electrification within each of these scenarios. They found that three of these scenarios met their 2030 Better Climate Challenge goal of 50 percent reduction, as well as the 2040 goal of 80 percent emissions reduction. So we can see a way to quantify and explore what are the different potential pathways at this scenario development stage.

How else might an organization develop scenarios? What might be considered from a phasing perspective?

*Stet Sanborn:*

One of the key things, and again, how it's different than a lot of traditional ECM sorts of studies is you have a chance from looking at these timelines to align with lease or turnover schedules that might be happening across your portfolio. So all of a sudden there's a time value to the discussions. So looking across at what your R&R budget might be, which properties are going to be getting attention, it's really great to piggyback on top of those other efforts, so again, you're getting maximum value out of the investment. So yeah, that timeline piece and lease turnover are key thresholds to start to get alignment with.

*Tom Abram:*

Yeah. I'd add from a timing perspective, I think equipment end of life is also pretty helpful. So if you've got major pieces of equipment, boilers, chillers especially too, when do you anticipate those reaching end of life, and making sure you have a plan and that there's not a huge urgency when a boiler dies and, "Oh, can we install a heat pump?" There's always a plan; there's some thought to it. Because that is a great time to do it, but depending on – you know, different systems take a little bit more work to prepare for electrification as opposed to something like packaged units, although you should still have alignment on what is your strategy, and make sure you can have that lined up as well.

Next slide please.

The redevelop scenario is a Milestone 4. It's time to assess these scenarios and then select a pathway. So this is really a crucial step in developing the ERP. We understand that changes might happen to the plan over time based on your technology, your industry understanding, changes in the portfolio itself, but it's really

important to align with stakeholders and leadership on a selected pathway to move forward.

Once this pathway is selected, there are several steps to provide some more definition to the plan. This includes updating existing organizational policies and requirements such as renovation, operation maintenance standards, new construction design, considerations for striving for net zero energy for new construction, for example.

Then we want to look at defining that phasing and financing more, so understanding how there might be opportunities to finance these measures, how they might be phased out in more time. Then really critical I believe is developing that work plan and assigning responsibilities, so that people know walking away from this that it can definitely take some time and energy, but understanding that the completion of the ERP is not the end of this. It's just the launchpad for the implementation of the decarbonization.

Stet, any lessons learned from this step, especially as it relates to the decision-making process?

*Stet Sanborn:*

Yeah. I can definitely say that working with a number of large portfolio owners who are right in the middle of this, you said it right on. The reason that you make an actual plan is so that for each of these elements that you see on your screen, from the financing side to even how you onboard buildings into the portfolio and renovation schedules, you have different entities within your organizations that are in charge of those levers in separate ways, but bring it together into a codified plan that you all agree on, and making sure that each entity within your firm that has those responsibilities takes ownership over their portion is incredibly important, again, to make sure that it's actionable and you're building up this momentum to keep the process going.

If it's one person's job in a corner and you're the sustainability head for your organization and you aren't able to leverage everybody else in your organization, the plan isn't going to work. So working together on the plan, getting buy-in, and then making sure that each entity has ownership, I can't stress enough how important that is, watching organizations go through this process right now.

*Tom Abram:*

Yeah. I agree 100 percent. I've definitely seen some partners be very successful in developing this framework at a high level, providing the guidelines on what needs to be done, and really

handing it to different departments and, “Here’s the overall approach. Here’s what you need to implement and incorporate into your efforts.” Yeah, the more you can make this align with the natural flow of your organization the more successful you can be.

Next slide please.

So in Milestone 1 we discussed an organization selecting evaluation criteria. These are really different areas that are important to them, important to their operation. Here we see an example organization that’s assessing these different scenarios with their selected evaluation criteria.

Some organizations might find it useful to apply weightings to these different criteria, others may not. It really depends on the organization and what meets the needs.

Almost all organizations will identify cost as a driving factor in some way. So while doing so, it’s really important to incorporate all of these potential cost differences between the scenarios. This organization found that by applying deep energy efficiency measures they were able to reduce the size and cost of the electrified HVAC components. Then by pairing this with the deep electrification scenario component, they were able to provide a larger portion of their energy needs with onsite solar, which reduces the amount of offsite renewable energy and the overall cost.

So it definitely depends on the organization, the culture, occupant benefits. How can we provide some co-benefits as part of this process?

Any thoughts, Stet, on the process of evaluating different scenarios?

*Stet Sanborn:*

It kind of goes back to at the very beginning, of making sure that you’re aligning with your corporate culture to develop this. Even the success criteria of these scenarios, weighting criteria, should align with your company culture and some of the high-value portions of your company.

When I see things like risk, for me I look at folks who have portfolios in jurisdictions that are bringing on building performance standards or requirements, for instance. That’s a huge thing that can be – there’s a cost penalty that could be down the road. That’s a great way to get everybody aligned really quickly on



doing some test examples within that jurisdiction to help you meet those building performance standards, but also could scale to your entire portfolio.

So again, just kind of aligning with where your firm is at, where your company culture is, just making sure that the criteria that you're evaluating the scenarios on aligns with that corporate mission.

*Tom Abram:*

Next slide please.

I've discussed our example organization has aligned on Scenario 1, which looks at implementation of deep energy efficiency measures as well as deeper electrification efforts. So this wedge chart captures how they intend to achieve these emissions reductions.

This example is really based on those building-level assessment and scaling to the portfolio level with a special consideration for the phasing. So when developing these pathways, organizations might have more detail on the specific projects and buildings to address in the short-term.

So we have some graphics in the ERP framework that highlight this. It might be useful to look at your short, your medium, and your long-term. How are you able to break down the action plan for your decarbonization efforts?

What else, Stet, would you say organization should consider when developing their pathway?

*Stet Sanborn:*

I'd say the most important thing just to keep in your mind, because if you haven't done this this could be overwhelming, but it's the area under the curve that matters. It's the cumulative emissions that we have over time that really matter.

Earlier, when we talked about celebrating those early wins and setting some incremental goals right at the beginning, those can be one of the best pathways to getting action on your emissions really quickly, and pushing the slope of that curve down as deep as you can. Those early actions are going to have the most impact over time.

So when we look at these scenarios, it's easy to say 2040 is a long way out. We'll figure out how to get there. Start early, start incremental, and grab onto those wins and use those as a catalyst for additional wins, because at the end of the day it's the area, all

that purplish/gray area at the bottom of the graph, that cumulative value is what actually is driving climate impacts.

*Tom Abram:* Great. We have to act now.

*Stet Sanborn:* Yeah. Act now, act fast, and celebrate.

*Tom Abram:* Yeah, absolutely. Have a good time while you're decarbonizing. Next slide please.

After completing the plan, organizations, again, implementation of the plan, early shifting from individual piecemeal projects to a cohesive emissions reduction approach. So looking at this, we encourage taking a look at your emissions reduction plan, revising it, making updates as needed.

How might implementation feed back into those updates and revisions for a plan?

*Stet Sanborn:* What we definitely don't want to do is have a plan that just goes and sits on a shelf. Like I said, we need action. We need to get momentum in the critical mass to keep things moving. Within the plan, setting up this revision timeframe is a great place to reevaluate new technology.

If any of you guys are doing heat pump applications right now, you know that things are changing really quickly with cold climate applications, heat recovery options. Things are moving at a pace that in three years there's going to be new options, lower cost options. So it's really great to check in on your plan because you might be able to accelerate things. Prices might be coming down for certain technologies. So it's just really great to build in this continuous improvement process to the plan.

It's going to keep it more relevant. It's going to make sure that you're still tied to your company culture, your company metrics, but at the same time acknowledge that the market is shifting. The grid is changing. Technology is changing. So it's really important to build in that continuous maintenance.

*Tom Abram:* Definitely. By developing and then implementing your ERP, organizations can really gain confidence in their decarbonization approach and achieve the deep emissions reductions that we need in this moment. So we really hope that this is a resource that's valuable. Just like we encourage the ERP to revisit over time, we'll

also be revisiting this framework and we'll definitely appreciate input as people begin to sift through it and work with it.

Next please.

*Hannah Kramer:*

All right. Thanks, Tom and Stet. That was great back and forth. I appreciate that. We're going to do another Slido poll real briefly and then go to Q&A. Here's what's up on the poll. We don't have the descriptions up on the poll, so I'll just sort of go through that.

Where is your organization in the ERP process? Are you at kind of a project focus, where you don't yet have a portfolio of a plan, but you're doing a lot of pilot projects or other types of projects in buildings in your portfolio, but you haven't started a portfolio plan?

Have you had an early effort on a portfolio of a plan, like let's say you've started to categorize and prioritize your whole portfolio or are developing some pathways towards how you're going to address certain system types, let's say?

Do you have significant progress, where you have emissions reduction measure defined, you have some implementation plans, both at the building and portfolio level?

Then a portfolio-level ERP is drafted with what you're going to do, your timeline and your funding defined. So kind of the holy grail.

We're going to let you think about that poll and add your results to the poll. We will come back to the poll at the end. Right now we'll just jump into the Q&A. We don't need to go directly to the poll results yet. So the Q&A, again, is on Slido.com, event code DOE.

All right. We're going to get started with a question around due diligence. Usually investments in energy emissions reduction happen during that due diligence stage, before the building is in the portfolio. So could you advise on how the framework can be applied during this due diligence process. Who wants to take that one?

*Stet Sanborn:*

I'm happy to jump in really quickly because I have a client going through this right now. I would say the biggest value of the plan is literally having something to reference. So as you're going through due diligence on maybe a new acquisition for a property, how does it fit within your goals?

Are you bringing in an asset that is going to be really hard to then bring that building to the level of efficiency that you need? Or is it something that the building has already hit a certain performance target that you're like, oh yeah, this actually reinforces our decarbonization plan?

Bringing something on that then you need to bring more investment in later is kind of setting yourself back. But if you don't have a plan, if you don't have a target, it's really hard to take that information and share it with the C suite. Like from an acquisition standpoint, does this make sense? If there's no benchmark to set it against, then you've lost out that opportunity to sort of, again, reinforce the plan and make sure that the plan is still driving decision-making.

*Hannah Kramer:* Great, thank you. We have a lot of questions, so I'm going to move on to the next one. I appreciate that, Stet.

There are a couple questions about how you approach greening of the power grid. I know in our wedge chart we have a wedge for the projections for greening of the grid and the benefits to emissions reduction related to that. But can you speak a little bit more to that greening of the grid and even beyond that? Does it make sense to electrify buildings in areas with the dirty grids currently?

*Tom Abram:* Sure. I can take this one. We definitely encourage you to take the greening of the grid into consideration, which provides more impetus for electrification. I definitely encourage you to look at what are the impacts across your portfolio within different grids. Certainly there is a variation of areas that have grids that rely more on fossil fuels than others, but by utilizing efficiency, by utilizing heat pumps, we can greatly reduce the actual energy needed and reduce the associated emissions. So we definitely encourage that.

*Stet Sanborn:* I would add on that as a stopgap measure, oftentimes we're projecting out what the grid could do. There are very aggressive renewable projections. There are less aggressive ones. It can kind of give you an error bar, if you will, for your projection, which is totally possible.

But for those folks that are on a grid that is, you know, especially dirty right now, the impact that you can have with adding onsite renewables or adding renewables within your portfolio will have an exponentially larger impact today in your portfolio, regardless of what the grid is doing in your region.

So a lot of the measures that Tom mentioned, efficiency first, driving these efficiency measures, if you pair that with renewables, whether onsite or offsite, through power purchase agreements, you can have a huge impact today. So you don't have to be reliant on what the grid is going to be doing long-term. Don't let that hold you up from taking action I guess I would say.

*Tom Abram:* I'll add that on the onsite piece, it doesn't just help on the carbon side. It can help with cost as well.

*Stet Sanborn:* Yeah, absolutely.

*Hannah Kramer:* Okay. Related to cost –

*Stet Sanborn:* Because Tom brought it up *[laughs]*.

*Hannah Kramer:* - can you provide more context into how an organization might assess the cost of these different decarbonization pathways, so this high-level portfolio cost?

*Stet Sanborn:* Tom, if you want to take it, and then I can also step in and share some examples.

*Tom Abram:* You can start it off.

*Stet Sanborn:* So one of the things that the plan really talks about, and Hannah briefly mentioned this earlier, is building decarbonization audits or greenhouse gas reduction audits at a building level. A lot of times those are going to include cost of implementation.

One of the real benefits of the plan that Hannah and Tom have laid out is that you're looking for similar building, clusters, types of buildings that you've categorized, and there's a chance to take that financial information that you did with a really in-depth audit and scale that up really quickly to get an in the wind cost of what would that be on your whole portfolio.

So if you have 30 buildings with the same system types, roughly the same age and the use, you could just scale that cost information with escalation and sort of understand how that could play out in your portfolio. So it's like do the small piece that's really impactful, and then scale it across the portfolio. So that's one of the strategies that the plan talks about in trying to look at the impact of cost across a pretty broad portfolio.

*Tom Abram:* I'd also add that I think the framing is really important. So as we're looking at these different costs, we're looking at comparing the different ways to achieve our decarbonization targets. So it's no longer looking at does a project clear a certain simple certain payback. It's really about how do we achieve meaningful emissions reduction audits that are cost-effective, that get us to that target. There are a variety of ways to do it. You can just purchase a lot of REC's for example, but there are opportunities to achieve a really holistic approach to minimize overall cost.

*Hannah Kramer:* Great. Thanks, guys. Let's pivot to pilot projects. At what stage are pilot projects recommended to be implemented? One thing I like about the framework is that we do stress these building-level representative audits, which gives you a springboard into doing stuff right away. You don't need to wait until your plan is written to start implementing. So I wondered if you could speak to when to do pilot projects, how many pilot projects to do, when to stop doing pilots.

*Stet Sanborn:* I get really excited about pilot projects because you can learn a lot. I would say start yesterday. Pilot projects could teach us something at any moment. One of the things to think about what pilot projects you're doing, if you've done an LED retrofit, for instance, do you need to do another pilot to learn something? It's like, no, you've kind of got the value out of it.

Oftentimes I work with clients to start looking at maybe three or four pilots that touch on major systems, major building types. Implement a few that will give you the broadest understanding of the impact that you could have across your portfolio.

Then obviously phasing those, starting with high emissions intensity buildings is a great place to do a project, because you can get a big win doing those. Again, I like to celebrate any of the wins because it gets that momentum going and can get your team or your facility folks excited about the next pilot.

*Tom Abram:* I'll also add take advantage of other people's pilots, too, especially if you're in the Better Climate Challenge. Learn from your peers. Learn from others who might have piloted it. There's really not a need to pilot solar, for example. We know how it works. It's very reliable. You might want to look at what's the best financing approach for your solar project, but we know how solar panels work.

*Stet Sanborn:* I want to give a shoutout to the Better Buildings site, because a lot of these really great pilot projects are getting documented by Better Buildings and Better Climate partners. So you can see what your peers are doing. Leadership in a firm likes to know what their peers are doing. So you can use those pilots from other folks, as Tom mentioned, and learn from those and apply those.

*Tom Abram:* Yeah. And I'll say physics doesn't stop at state borders or county lines. Take advantage of what others have done elsewhere.

*Hannah Kramer:* Do we think we can talk about campus-level decarb planning in one minute? This is a challenge, guys.

*Tom Abram:* Thirty seconds for you and thirty seconds for me.

*Stet Sanborn:* Okay. I'm in the middle of one right now with seven campuses within a whole system with some 700 buildings. We are literally following this exact process. The big thing is when we start to look at big distributions at some. There's a scale, a jump that we look at, but there's still a tremendous number of efficiency measures that can be rolled out.

The nice thing about a campus scale is that you have facilities' folks that have their fingers everywhere. So you can leverage that knowledge to really take that next step faster than you might if you have different property owners across an entire portfolio.

*Tom Abram:* Definitely. We certainly have campuses in mind as part of this as well in the development. The differentiation is really your key characteristics that define and contrast your buildings. It's not going to be based on location because all of your buildings are in one location, one climate, one grid. There are other characteristics like building types and HVAC types that you might be looking at instead.

*Hannah Kramer:* Great. You guys did it. Awesome.

The results of our poll: about half are really focused on projects. This is also exactly what we're seeing with our Better Buildings partners. We provide technical assistance with quarterly one-on-one meetings through our program.

Why don't you go back to the slides, Jasmine, and we'll just close it out by giving you some more information, if you're interested in joining.

The Better Climate Challenge is still accepting new partners. The commitment is 50 percent Scope 1 and 2 reduction within ten years. Like I said, we provide technical assistance. You get one-on-one meetings with people like Stet or Tom, and we have 150 organizations. So you can click here if you want more information.

Next slide.

The summit. This was mentioned earlier. We'll have a workshop on April 11 for BCC, Better Climate Challenge partners. It will come from pilot partners going through, doing exercises around this framework and getting more thinking into how it applies to your buildings. So that's April 11.

We have an emissions reduction planning session during the summit. We have a low-carbon pilot. There's so much on decarb at the summit, so join us there in D.C.

I will let Nate close this out on the hour.

*Nate Allen:*

Thank you, Hannah. I really appreciate the banter that Tom and Stet have provided around the content we wanted to share with you today. Hannah, your work to pull this resource together was outstanding.

I'm grateful for the attendees that we had. I was going through the list during the call. We had a great turnout. I hope to meet anyone who I haven't met, I'll be at the summit this spring, April 11 – 13 here in D.C. We look forward to talking more soon.

Take care, everyone. Thanks for joining us.

*[End of Audio]*