
Christopher Price: Hello, and thank you for joining the webinar today. We're gonna give folks another few moments to log in, but we'll get started soon.

Alright. Let's get started. Hello, everyone, and welcome to the 2023-2024 Better Buildings Webinar Series, dedicated to bringing you the latest actionable insights from leading industry experts. This annual series is a chance to explore the topics, technologies, and trends that affect your organization as well as efforts to accelerate decarbonization and energy efficiency adoption. Next slide.

Today's webinar is called Coining a Cleaner Future: Financing Decarbonization Projects. Before we dive in, there are a few housekeeping points I'd like to cover. Please note that today's webinar will be recorded and archived on the Better Buildings Solution Center. We will follow up with everyone on the call today when the recordings and slides are made available. Next, attendees are in listen only mode, meaning that your microphones are muted. If you experience any audio or visual issues during the webinar, please send a message in the Q&A box located on the bottom of your Zoom panel. Next slide.

My name is Christopher Price, and I'm going to be your moderator for today. I am an R&D associate staff member in the Manufacturing, Energy Efficiency Research and Analysis Group at Oak Ridge National Laboratory. I primarily work with the DoE's Better Buildings, Better Plants programs on the industrial side, helping partners identify energy efficiency opportunities, baseline their energy consumption, and implement projects to reduce energy intensity and reduce their carbon footprints. I also help to develop a lot of the software tools and guidance documents that the Better Plants and Better Climates program has been releasing, and also as a contributor to the emission reduction portfolio guidance document for industrial partners. Next slide.

In today's webinar, we'll be doing a few different things. We have some quick, brief polls for you to participate in, as well as a short welcome. I'll be introducing the topics, as well as the speakers for today's presentations, and finally, we'll be doing a Q&A session at the end where you can ask questions about the presentations or any other questions you might have. Next slide.

Today, we will be using an interactive platform called Slido for Q&A and polling. Please go to www.slido.com on your mobile device, or by opening a new window in your Internet browser.

You can input today's event code, which is #doe. If you'd like to ask our panelists questions, please submit them any time throughout the presentation. We will be answering your questions near the end of the webinar. In Slido, you can select the thumbs up icon for questions that you like, which will result in the most popular questions moving to the top of the queue. Next slide.

Before we begin, we want to learn a little bit more about you. So, let's start off with a few polls. Please join us over at Slido to respond to the following questions. If you're having any issues, please reach out to our tech support team using the Zoom Q&A function.

So, the first question is, what sector best describes your organization? So, there's contracting or consulting, local government, higher ed, nonprofits, industrial, health care, multi-family, real estate, utility. There may be a couple of additional options down at the bottom, there.

So, right now, there is a pretty good showing from the industrial side, higher ed. I think the top one was contracting—yep. Local government is on here, as well. Numbers are still moving around here, but a lot of consultants, a lot of local governments, a lot of industrial partners, and then a lot of other partners here, as well.

Awesome. We have a pretty good cross section of partners here from the building side and from the industrial side.

Alright, let's move on to the next poll. Where are you in your decarbonization journey? So, there's a few different options for you to choose from. We are simply project focused. We don't really have a portfolio level plan for decarbonizing. We've made significant progress on our decarbonization. We have a plan drafted, we're currently using the DoE's ERP framework, that's the one that I would encourage you to put, if you can, or we're in the early days of our decarbonization efforts. Alright, so, we have a lot of partners that are in the early stages, a lot that are just focused on projects, with not a lot of portfolio level planning, here. A few partners that have significant progress or already have a plan implemented, and then just a couple that have already seen the DoE's ERP framework. Well, hopefully at the end of this, everyone can pick that last option and we can get that number up there a lot higher. Alright, next slide—or, next poll.

Alright, last poll for you. What is your main source of funding for your decarbonization projects? I believe this is more of a free

answer type response. You can see a word cloud is gonna start getting generated here, so, you can use the same, exact words, or you can put new words in here. The more people that say a specific thing, the bigger, it'll grow. So, grants is definitely the largest, internal funds is growing in here. Federal government, efficiency savings, green funds, grants and loans, self-financed. I'm starting to see grants, internal funds, private capital, federal government. Those seem to be the biggest ones that are growing out of this cloud, here. Alright, just a couple more people typing, and then we will move on to our topics. Alright.

Thank you for participating in those polls. We will start with our first presentation, and that will be me discussing the emissions reduction planning.

So, again, my name is Christopher Price, I work at Oak Ridge National Laboratory. I'm primarily on the industrial side where I work with 14 different industrial partners, from automotive to, I have companies in the food and beverage space, as well. What I do on a day to day basis is, I help companies identify opportunities for reducing energy and reducing their carbon footprints. So, this first presentation is going to be discussing the emissions reduction planning guidance and milestones that the Department of Energy released in the past year, which will hopefully give you a little more context into why ERP planning is important and also how to create that emissions reduction plan for yourself.

So, before I get into the presentation, I just want to give a brief shout out to Paulomi Nandy, she is our in-house carbon expert, one of the main authors of the ERP planning document on the industrial side and also the co-author for this presentation. Next slide.

So, before we dig into the milestones themselves, there's two new resources that were released by the Better Climate Challenge, Better Buildings and Better Plants within the last year that is specifically looking at how to create an emission reduction plan for the two different sectors. So, there is a buildings portfolio specific guidance, and industrial portfolio guidance. You can access these documents using the links at the bottom of the screen, or you can use your phone to capture the QR codes and it will take you directly to those documents. Both of these have the same five milestones, although specifics within those milestones will be geared towards the specific sector. The overall flow and the point of each of the milestones are the same, it's just that industrial portfolios will have a little more information relevant to industries;

buildings portfolios will have the same thing on the buildings side. This presentation is going to focus more on the industrial side, but the milestones are completely analogous and you can take one for the other, here. Next slide.

So, why develop a plan? There are a few different reasons that are very important for developing these plans. When you develop your emission reduction plan, one of the first steps is to identify and engage stakeholders within your organization. Having a plan helps you identify all of the relevant stakeholders in your organization, which really helps you to ensure that you have all of the information that you need to implement your plan, you have access to higher level individuals at your organizations who are in charge of implementing those programs or in charge of capital funds within your organization, but it also helps with buy-in with the organizational sustainability efforts.

Having a plan also helps you to have actionable steps to meet your greenhouse gas emissions reduction goals as well as provides you the tools to analyze and identify the strategies that you need to reach those decarbonization goals. Having a plan helps you align your operational needs with your production or your building portfolio goals, and having that plan also helps you secure financing and personnel needed to accomplish those goals. That last point is very specific to the webinar today, where we're going to be talking about where in the ERP should you be focusing on aligning your financing goals.

The ERP also helps you implement a long-term sustainability goal, specifically, by preventing you from locking into assets that have high emissions or technologies. One example with one of my companies is, they had a rooftop unit at one of their plants. It failed. It was at end of life. And the plant went up on the roof and they looked at the name tag, and they just went out and ordered basically the same unit. If they had an emissions reduction plan on the books and they had engaged all of their stakeholders, they would've gone out and instead of just buying another gas-powered unit, they might start looking into heat pumps or other kinds of HVAC equipment that would be more friendly towards their environmental goals.

And then the last two points, here—having an ERP helps you stay on track to achieve your long-term greenhouse gas emissions reductions while also meeting your regulatory and reporting requirements. Next slide.

So, taking a look, this is the high-level overview of the ERP framework, and that framework is really geared towards helping industrial organizations develop specific and actionable plans for reducing their greenhouse gas footprints. The framework consists of five milestones, which we will go over in the following slides, as well as sort of a sixth step, but it's really a continuous process of revisiting each one of these milestones to make sure that your ERP stays relevant, that you're taking advantage of all of the financing opportunities that are available, or taking advantage of new technologies or changes in costs that come up over time. Next slide.

So, digging into the individual milestones, milestone one is establishing your inventory and your scope of work. This is where you begin to identify engaged stakeholders within your organization—so, this is upper level management, this is line operators, this is financing operators. It's all of the people that you need to buy into your emission reduction plan to make sure that you have not only the data that you need to quantify your footprint, but also all of the access to funds and buy-in to make that plan a success. In this step, you also establish a greenhouse gas inventory management plan. So, how are you going to collect the data that you need to create your footprint? You also use this step to define your scope of work and set your reduction targets. So, with this data, once you've established your footprint, how—what is your end goal? How are you going to evaluate yourself in the process towards reaching that goal? Next slide.

Milestone two is categorizing your portfolio. So, based on the criteria you set up in milestone one, you start to gather your actual greenhouse gas emissions data. So, using the procedures, you collect the emissions data for processes, for facilities, scope one and scope two, maybe some scope three is in there, as well. And you use that data to identify your significant greenhouse gas emitters. This can be equipment, it can be facilities, it can be specific things in your portfolio that you want to focus time and effort on. Once you've identified your significant emitters, you can bench those emitters and select different systems for further analysis. Next slide.

Milestone three is where you start to assess different measures that you can use to reduce your emissions portfolio. So, in this step, you complete facility and portfolio level decarbonization assessments and you use those assessments to identify and quantify projects and operational practices that can help reduce your emissions. For each one of these projects, you can start to estimate

the implementation costs as well as different financial measures such as return on investment or any other metric that you want to use internally for the financial side. What's important to note here is that these estimates are not a go or no-go decision point for your organization. All you're doing in this step is, you are putting numbers to the different projects. It may not have a great payback, but you're just putting information on paper that you can use in the upcoming milestones to put together scenarios and analyze the different pathways that you may want to take to decarbonize your portfolio. Next slide.

So, while assessing these measures, there's a few different things that you want to keep in mind. So, when performing a decarbonization assessment, you should focus on large greenhouse gas emitters, particularly those that are hard to decarbonize. Based on energy use, operational requirements, production means, you should identify emission reduction measures or ERM's that are going to have the biggest impact on your portfolio, that may be the easiest to finance, or that you may want to consider in the future. You should prioritize ERM's with—that have additional benefits such as improved efficiency, improved safety, increased productivity, maybe an increase in product quality, or a reduction in waste generation. You should also prioritize ERM's that have particularly good economic analysis when putting together your emissions reduction plans. Next slide.

So, some of the opportunities for these decarbonization assessments at the facility level, energy efficiency is going to be one of the primary pillars, here. Energy efficiency is the most cost effective option for near-term emissions reduction potential, and it should always play a very important role in any emissions reduction plan. Other opportunities at the facility level, there may be opportunities to purchase renewable energy or generate renewable energy on site. There may be opportunities to switch to low carbon fuels, feed stocks, or energy sources. In the longer term, there may even be opportunities for carbon capture and sequestration, particularly for hard to decarbonize processes in an industrial facility. Next slide.

On the portfolio level, a decarbonization assessment should look for things that are cross cutting. So, upgrades to buildings such as improved HVAC equipment, improved lighting, maybe improved compressed air systems, or better insulation—things that can be applied at every facility within a portfolio. Portfolio level purchasing of clean energy, switching to low carbon transportation alternatives—so, maybe electrifying your vehicle fleet. Assessing

strategies to reduce emissions using demand management or energy storage options. You may even be able to look at your supply chains to reduce material handling or processing. All of these are things that you can look at at the portfolio level. Next slide.

Once you have gone through these decarbonization assessments and you've created lists of these emission reduction measures, you can start to develop different milestones. So, this milestone, milestone four, is where you put together a phased approach to implementing these measures. So, do you want to pursue energy efficiency first? Do you want to electrify first? Do you want to look at carbon capture? What order do you want to implement these different projects? So, you're not just developing one scenario, you are developing multiple different options for you to pursue. Within each of these options, you should evaluate not only the potential to decarbonize but also your financing options. And again, this is not a go or no go decision point, you are simply laying out the different paths for you to pursue in the future. Next slide.

Each one of these scenarios, you can use to make a graphic similar to this. So, you have a business as usual case, and for each one of these scenarios, you can see how it reaches the long-term goal of net zero by 2050, but it gets there in different paths. As you decarbonize and as you start to implement your project, you can start to put your actual progress on these different scenarios and see—okay, maybe we're following scenario one. Maybe we're fling behind scenario one. Maybe we wanna move over to a different scenario based on our current trajectory. You can use these scenarios as a feedback loop, but then also use them to switch over if suddenly a new technology comes on the market or a technology becomes cheaper, and you already have these scenarios ready to pick from in the future, should different things happen. Next slide.

The fifth milestone, this is really where the rubber meets the road, here. So, based on the different scenarios that you've created in the previous milestone, this is where you would go ahead and pick one of those scenarios as your emissions reduction plan. So, once you've picked a particular scenario, this is where you can start to update your organizational standards and procedures, secure final buy-in from all of your stakeholders, release your emission reduction plan internally—you might even do that publicly—and you go out and do your final financing, securing of your financing. Along with this, you set your project appointment schedules. So,

based on the scenarios, you pick one, and then you implement it internally. Next slide.

The final step here, it isn't really one milestone, but it is just a continuation of the previous five, and this is ongoing implementation. So, the emission reduction plan is not intended to be a static document. It is meant, really, to be a living document that you come back to you, analyze, you change based on where you are, different financing options that are available, different technologies that have become available. You can take learnings from previously implemented projects and update the different scenarios. You just continuously update, analyze, and move through this cycle of tracking, revising, and implementing new projects. Next slide.

So, having walked through the five milestones and the ongoing implementation, if you complete these, your organization should have a pretty good start on an emission reduction plan. And the emission reduction plan really helps when you're dealing with the different barriers of decarbonization. On screen is results from a survey of industrial partners that participated in our decarbonization working group on the industrial side, just asking a series of questions of, "Do you see different aspects as barriers in your organization?" The ones that are highlighted are ones that are particularly relevant to financing. So, you have corporate financing, availability of technology, operational costs, infrastructure readiness—all of these, in some way, are related to capital funding or financing that is available. And as you can see, it is of large concern to a lot of organizations. Next slide.

Digging into the corporate financing results, what we saw was that, when companies list financing as a barrier, it's really a result of a few different things. So, capital costs for decarbonizing are usually fairly substantial, especially when you are changing technologies to enable electrification. There's a lot of uncertainty around the costs to decarbonize, and decarbonization projects usually have a high payback period, which puts them at a disadvantage when competing for internal funds. The ERP can help with all of these particular issues on the corporate financing side by focusing your organization's efforts, really putting a plan out there to follow, and helping to justify projects and ultimately show how a particular project can help you reach the end goal of decarbonization. Next slide.

The final slide here is simply, I wanted to highlight a software tool that the Better Buildings Program has put out there, and that is the

financial navigator tool. If you go to the link on screen here, this takes you to an online tool that can help you understand each of the different financing options that are available. There's different options for following, each one of the arrows takes you to different webpages that helps to explain each one of these different vehicles. It's a very good tool for information gathering and can really help you put together the different pieces of financing when putting together your emission reduction plan. Alright. Next slide.

If you have any questions about these emission reduction portfolio, please feel free to reach out to any of these e-mails or people on this screen, here. Again, I'm Christopher Price, I work at ORNL. Pauloma Nandy does, as well. Thomas Wenning is our Better Plants Program Director here at Oak Ridge for the industrial side. Next slide.

Alright, so, with that, I'd like to introduce our next presenter. Laura Jones has received her Bachelor's degree in Mechanical Engineering from Purdue University. In 2015, she became a Certified Energy Manager, where her passion for energy efficiency led her into the world of sustainability. Laura has been with Cummins for 19 years in a variety of roles, from site level facility engineer, to business segment and regional facilities.

Prior to her current role, Laura was part of the Global Facilities Functional Excellence Team. Laura joined the Environmental Center for Excellence Team in 2021 in a role dedicated to supporting the Planet 2050 Strategy, and worked to develop roadmaps for projects focused on meeting the 2030 sustainability goals for facilities and operations. Currently, as the Director of ECO Efficiency, she leads a team driving the efforts to reduce the environmental impacts of energy, water, and waste at Cummins operations worldwide. She also manages the Environmental Strategic Capital Budget, which funds ECO projects critical to meeting these goals.

And with that, I'll hand it off to Laura to kick us off.

Laura Jones:

Thanks, Chris. Appreciate the introduction. Thanks for having me. I'm excited to talk a little bit about Cummins' journey in sustainability and greenhouse gas emissions reductions. Next slide, please.

So, at Cummins, we are committed to making people's lives better by powering a more prosperous world, and we are continuing to advance technology and power solutions that are essential to our

future. We understand that strong communities and businesses depend on a healthier planet, and we also understand that we can't do this alone. So, Planet 2050 is our long-range business strategy with an environmental lens. Additionally, the company recently announced two other major programs within the Planet 2050 strategy around Destination Zero, which focuses on our product carbon neutrality, and Cummins Water Works, which addresses the global water crisis in our communities.

But today, I'm gonna talk about Planet 2050. So, next slide, please.

And, in Planet 2050 strategy, it's a long-range strategy that uses actions, advocacy, and partnerships to do our part to drive change for a healthier planet. We have three major goal priority areas—addressing climate change and air emissions using natural resources sustainably, and partnering so our communities are better because we're there. On the right-hand side, you can see our nine specific 2030 goals, and goal number one is specific to reducing our absolute greenhouse gas emissions from our facilities and operations by 50 percent. And this is with a baseline of 2018. So, that's what I'm gonna really be focusing on today in our discussions. Next slide.

So, how do we achieve 50 percent reduction? An absolute, that's a big, big ask. So, where we started in 2019 was with data analysis and modeling that we completed to understand what the greenhouse gas reduction strategy and what the opportunities for Cummins were. This is actually in line with what Chris was just covering in the ERP framework. It's just a process that we did maybe a little bit earlier, and the ERP framework really aligns well with what we actually did. What we also have here is cross functional teams that are currently working on these focused initiatives. So, we call them the Critical X's. You can see here, they are used to drive strategy and execution towards the goal achievements.

Just to go through a couple of them, energy efficiency is really where we had been focused, driving continual improvement on manufacturing processes to reduce energy consumption at the facility level. That could be with lighting, with HVAC, with other opportunities within the facility itself. Compressed air is a new one that we added. Compressed air for Cummins represents about 30 percent of our electrical consumption and manufacturing. So, it's a huge opportunity for us, and we're actually driving hard to

eliminate compressed air. It'll be a big part of our greenhouse gas overall reduction.

Another one is renewables, on site and off site. So, we currently have 45 installations worldwide, generating over 22,000,000 kilowatt hours of on-site solar generation, and we're looking to increase that by 2030. And I'll talk a little bit more about that later.

For advanced manufacturing, you know, this is all about adopting advanced manufacturing technologies, featuring Industry 4.0 elements for monitoring and improving to reduce our environmental footprint. Another focus area of the team is looking at any new equipment purchases, and we recently completed an update to our Cummins production equipment standards to include sustainability and align with our Planet 2050 goals.

The last one I'll touch on is fleet EV. So, that is another big part of our strategy, converting owned and leased equipment—service trucks, material handling equipment, et cetera—from fuel burning to electric. Next slide.

So, that's our strategy, but how are we going to do all of that work? And this is really where the funding piece comes in. Our overall strategy is supported with incumbents at the highest level, with the CEO, and the Cummins leadership team, also on supporting. Over the years, we've had evolution of funding for our projects, with it really starting with the funding being held and managed at the business level. So, we have several business units within Cummins, and they were funding and managing projects supportive of our sustainability goals. But maybe sometimes, they got deprioritized against other business needs, and depending on what was going on. Then, for a while, the budget was managed at the business but managed centrally. So, our Central Environmental Team would help the businesses prioritize the best projects, but they would still really have the final say on the funding and the management of that budget.

And here in the last few years, we have added—we have really pulled all of that centrally, and my team manages our Global Capital Plan for Planet 2050 projects. And we've expanded it beyond eco. So, the first box up here is eco efficiency greenhouse gas, water and waste. That was really where the core of our focus high school been. We have expanded it to be a comprehensive approach, and including new construction acquisitions, packaging, painting, and VOCs, and then fluid management. So, I know it's

not just about greenhouse gas, but that's really what we're talking about here today. But we do manage it from an overall holistic approach, trying to prioritize the best projects.

And the next slide goes into a little bit more about that prioritization. And right here, I've just got the greenhouse gas or energy prioritization criteria. There's four specific criteria, and I think these align well with what Chris was talking about with the ERP tool. In previous goals for Cummins, we were focused on energy reduction or MMBtu reduction. And now, we've switched to focus on greenhouse gas. So, we had to adjust our prioritization matrix a little bit to bring greenhouse gas into the mix. So, you can see the criteria on the left-hand side. First, we're looking at the greenhouse gas or the energy impact, and I don't know if you're familiar with the C&E, but you can see the scores here at the top—9, 3, 1, 0—and then also, the criteria have different weightings. So, this is strictly by the numbers for our project list that's submitted and how we prioritize it.

Then, we have a dollar per environmental benefit. So, it's a dollar invested divided by the greenhouse gas reduced. Simple payback, and then for this coming year, we've added an environmental justice criteria. So, really looking at where the projects are located. If they are in disadvantaged communities, if it's a direct or indirect impact to the environmental burden of that community. So, this is kinda just a real high level look at how we prioritize projects. And then, of course, you know, you get through the numbers, and then there's some projects that we have to define, you know, that are enablers. They maybe don't have the savings right off the bat or score very high. These could be things like piloting new technologies, you know, around heat recovery or different methods to do some of our processes. It could just be the basics like adding some monitoring and metering to our plants. So, those, we would call enabling type projects that may not hit the prioritization hurdles, but we want to make sure that they're supported, as well.

The next slide is just an example of a really great project that we had this year, and it's one that I would say—and there's a lot of industrials on here, but a lot of non-industrials, but we had been previously focused, really, on our facilities and operations. So, the HVAC, the lighting—those types of things, but really, there's a lot of savings to be had in the manufacturing processes. So, just a quick snapshot here, you can see the investment, the greenhouse gas reduction, also some water reduction, and the annual savings. So, this is less than a two-year payback. And really, it was about reducing the number of machines, getting this more, I think these

machines here do five or six operations in one C&C, so, we were able to consolidate and eliminate some equipment and that, in itself, reduces the energy.

Now, this project is a good example, also, it says it's joint funded from the business and the strategic environmental fund. So, we really looked at the amount of greenhouse gas savings to understand how much we would fund. We, you know, with the central fund, we can't fund a whole, entire project to buy new equipment, but we want to fund the delta or what the difference is to make that equipment the most efficient. I think Chris mentioned the example of buying the like for like replacement, but you could buy, in an HVAC scenario, you could purchase that next upgrade, that heat pump, that next level up. The way we do it with our centralized fund is, we maybe don't pay for the equipment replacement, because it's obsolete equipment, but we would support and fund that additional funding to get the most efficient technology today. So, we partner with the businesses on that.

The next slide, I just put a snapshot in here of our USIRR. So, we have integrated environmental into our finance form. So, a form like this is submitted with every single capital investment project. We've got some built in escalators on the cost of—and these are all just example numbers, they're probably not accurate. But I did want to point out, too, that we also include a cost of carbon, this green line, here. It's very conservative, \$7.00 per metric ton of greenhouse gas. We're—you know, we've had that for years and are in the process of re-evaluating that, but we are trying to give that extra boost on the financial analysis for greenhouse gas reduction projects.

The next slide is another project example of on-site solar, where we own and operate this solar PV farm. It is a 3.6 megawatt system with sun tracking technology. This is one of our largest manufacturing facilities in the company, so, it's really—even though this is a large system, it's only about 6 percent of the manufacturing site's electrical need. We do have, as I mentioned before, an internal target for on-site renewable energy. It's not a specific 2030 goal, but it's part of our overall greenhouse gas reduction goal, where we're trying to get to 10 percent of our electrical energy from on-site solar, and that will convert to about 5 or 6 percent greenhouse gas absolute reduction to our goal. Next slide.

So, when we talk about renewable energy as a way or a means to reduce greenhouse gases, early on, we came up with these four

principles. Any project on site, off site, purchase—whatever it might be, needs to be additional. So, the generation and the purchases must have a net positive effect in the real world. We also want it to be tangible and connected to our facilities and stakeholders. So, this means, we—you know, where we don't have a lot of facilities, say, in the Southwest region of the United States, we're not gonna be buying wind or, you know, putting a project in there. So, that's really how it connects to our locations. Obviously, for any project to go forward, it must be cost effective and cost competitive against the long-term and then transparent. So, we want to be very transparent on our renewable energy accounting and describing the renewable energy characteristics and attributes or RECs. So, those apply when we're looking at any kind of off-site or not common zoned assets for renewable energy.

And the next slide shows a really great example of that, of a project—so, you can go to the next slide—for an off-site renewable energy project. This was a virtual power purchase agreement, and those can be very complex long-term financial contracts to buy power and the environmental attributes from off-site wind and solar gardens. They are called virtual because the power goes directly into the grid and not to our facility, and the size of the contract is limited only by the size of available projects.

So, for this project that Cummins was an off-taker for, it was an expansion of the existing Meadow Lake Wind Farm in Northwest Indiana. And you can see the statistics there of a 75-megawatt peak. This does represent 43 percent, approximately, of our total U.S. and nearly 100 percent or 100 percent of our Indiana electric manufacturing consumption. So, it was really important for this project to be in Indiana. And this was one of those, you know, you might ask, you know, how was the approval process for a project like this from a funding perspective? And in really short, and I wasn't completely involved, as this was done in 2018, it was very long and complex, all the way to the board and the leadership team. You know, we were posed with scenarios, you know, what's the best case, what's the worst case financial results, and could we, if this is gonna cost us X, could we invest that similar dollar amount and get a similar greenhouse gas reduction?

So, all of those scenarios were reviewed and understood, at least with the projects that we knew of at that time, and the technology, what could we do. And the decision was made that it was a good project, and we should sign into this long-term virtual power purchase agreement for those reasons. And it's been a really good

project. Some of those are maybe a little bit harder to find now as they're brand new, but the costs are definitely changing.

And I think that's really the last slide that I had for today, and I appreciate everybody's attention. Thanks, Chris.

Christopher Price: Great. Thank you so much, Laura, for that really insightful presentation. Let's move on to our Q&A session. If you haven't already, please join us over at www.slido.com, with the event code #doe to submit and up vote your questions. Again, in the interface, you can see a little thumbs up on the side of each one of those questions, and you can up vote the different questions, and we will try to answer as many as we can in the next 10 minutes or so.

Alright, let's go through just some of the top ones, here. "Does this DoE ERP software correlate or communicate to DoE's 50001 Ready software?"

The framework is just an outline of how companies can put the ERP together. It's really meant to guide organizations to create that framework. The 50001 Ready software did release an update recently that includes decarbonization in the 25 steps of the software tool. So, there's going to be a lot of overlap between the two in terms of identifying your energy champions, your decarbonization champions, identifying your stakeholders, benchmarking your emissions reduction portfolio—all of that kind of stuff is going to overlap. The milestones have five steps, the 50001 Ready tool has 25 steps. So, it's not gonna be the same, but they are going to very much correlate with each other.

Alright, let's look at another one, here. "So, is DoE envisioning a grant program for higher ed similar to one for K-12 schools?"

I'm assuming that is a question related to the Renew America Program. In terms of specifics for higher education, I don't know of anything specific for that. I know that there is a lot of funding from the IRA and BIL laws that is still being implemented. There was a big rush of FOAs that went out this past spring. Once those get selected and implemented, there's probably going to be another set of FOAs that go out with different funding opportunities that could include higher education, but right now, I'm not aware of any specific to higher ed.

Let's look at one for Laura, here. "How does—how do you determine if a project achieves additionality?" You mentioned that

every project in your program has to have that component. How do you go about that?

Laura Jones: Yeah, that's one that's more challenging, right? So, when we did the virtual power purchase agreement, it's about, if Cummins wasn't an off-taker or wasn't gonna sign on, the project wouldn't happen. And in that particular case, it was. So, it really has to be a project or an expansion of renewable that we're driving or is happening because we are going to be an off-taker. That is really about the additionality. If it's something that's gonna happen anyhow and, you know, they're gonna be sending to the grid, that—you know, or maybe it's something that's already existing, it wouldn't really count for us as additionality.

Christopher Price: Okay, awesome. "Is DoE interested in projects that reduce emissions from municipal buildings/opps, or will there be funding opps for community-wide emissions? Beyond existing incentives, how can emissions in the residential sector be reduced?"

DoE is very interested in reducing emissions in the residential sector. Here at Oak Ridge National Laboratory, we have a lot of research into improved insulation materials, there's a lot of heat pump research that's going on. We have a lot of research into other kinds of appliances, different technologies for different appliances for the residential sector.

A great resource for the residential side, Rewiring America has an Inflation Reduction Act calculator for the residential sector. So, you can go to the Rewiring America website, put in your household size and your income and it'll give you an overview of all of the tax incentives and subsidies that are available for the residential sector. Besides that, there's a lot of other research and analysis going on into reducing emissions throughout all of the different sectors that the DoE is interested in.

Alright. Let's look at some other ones. "Do these frameworks incorporate embodied carbon emissions?"

This one, I think both Laura and I might be able to speak to, here. I know that the ERP framework doesn't specifically call out embodied carbon, but it is something that you can include in your emission reduction plan. If you're starting to look at those Scope 3 emissions and including those in your benchmarks and your goals, having that in terms of the raw materials that you are purchasing, the processes, or maybe the shipping that you're putting into that, that is definitely something that you can incorporate into that to try

and drive those down, especially if they're a significant portion of your overall carbon footprint.

Laura, on your side, are you starting to look at any of the—

Laura Jones: We're just starting to look at embodied carbon. You know, for us, we started with the facilities and ops, and truthfully, our next focus is our Scope 3 category 11, which is our products in use, which is for us an overwhelmingly, the majority of our emissions. But we are—we have started to think about embodied carbon and tried to understand it a bit more, yeah.

Christopher Price: Alright. Let's look at, "When you say prioritize ERM based on cost, does that mean you do the most cost-effective options first? Sometimes, it's optimal to combine initiatives to make the overall ROI look better."

Yes, of course. You can look at individual projects individually, or you can bundle them together to get maybe some of the ones that aren't so favorable, get the overall return on investment down for everything. So, you—when you're doing that assess measures step in milestone three, you're simply putting numbers down on paper for each one of those projects. And then, when you put those scenarios together, that's where you can start to look together at bundling things.

Laura, do you do something similar to that where you bundle projects together to improve the financing side?

Laura Jones: We have a little bit, but usually, it's a sum of the total, so, we don't really look at them that way. They kind of standalone. But if it's a particular building that maybe has a large HVAC upgrade, there's a lot of different things happening there with maybe the air handling units and the chillers and all of that is kinda combined, I would say, yeah. Yeah.

Christopher Price: Okay. Awesome. Let's look at just a couple more questions, here. "On-bill financing would be really helpful. How can we work with a utility to offer this?"

A lot of utility markets, particularly if you're in a regulated retail market, those are going to be regulated by your state public utility commission. All of those are public organizations that are open for participation. If you're a particularly big player in your area, you might be able to influence the policies that come out of those different commissions. If you're in more of a retail choice market,

you might be able to have more options for purchasing different renewables than you know about here. So, really, those organizations are publicly regulated. They are influence-able. It's something that you can start the process of getting that rolling out there. It can be a little bit daunting, but they are ultimately influence-able to get those things going there.

For the VPPA that you mentioned, Laura, was that project in the same market that you operate, or was it—

Laura Jones: Yes.

Christopher Price: - it was?

Laura Jones: Yeah. So, it's—you know, most of our facilities in the U.S. are in Indiana, and that wind project is in Northern Indiana. I believe it's in the same market MISO grid.

Christopher Price: Awesome. Alright, let's do maybe one more question, here. "Is there a cost—is there cost benefit data on fleet conversion to EV?"

There is a lot of research going on at the different national labs when doing—looking at, exactly, these questions. There's different national lab reports, there's a lot of guidance on this kind of thing. Ultimately, when you're looking at conversion of EV, it's going to come down to your local electricity market, your particular purchasing options for the electricity that's going to supply those EVs. If you wanna look at the embodied carbon side of things to figure out how much do we need to drive these EVs to reach that break point of parity with an IC engine, all of that's going to be fairly specific to where you are. In terms of financing, that's gonna be local to your areas for implementing those things.

Let's do one last question to Laura, here. Specifically, "How do you allocate capital to projects based on environmental impact and economic impact? Do you have a specific metric that combines the two?"

Laura Jones: Yeah, so, on the one slide that I shared that had the prioritization matrix, we combined that in the C&E. So, if you're familiar with the C&E, you'll get a separate score. You might get a 9 for environmental impact and a 3 for a financial impact, economic impact. And then you—the C&E will combine that with the weighting. We do have, our environmental impacts get more, get a higher weighting in that C&E than the financial impact does. And

then it combines it, and it gives you one score at the end. So, I guess the answer would be combined.

Christopher Price: Alright. Well, with that, thank you, everyone, for your questions, and to Laura for your insightful responses, here.

So, this webinar was part of the 2023-2024 Better Buildings webinar series. As you can see, we have a great lineup of presentations all the way through 'til next March. Please visit the Better Buildings Solution Center to learn more, and to register for future webinars. Next slide.

We hope that you will join us on Tuesday, December 5th, for our next webinar, titled, "Turning Insights Into Action: Bridging Building Data Analytics and Work Order Systems." Join this webinar to hear from two leading organizations about their innovative strategies for seamlessly integrating FDD with maintenance work order systems. Next slide.

Next, we are pleased to announce that registration for the 2024 Better Buildings Better Plants Summit is now open. The summit will be in the heart of Washington, D.C. on April 2nd through the 4th. In addition to engaging in interactive sessions, attendees will look forward to plenty of opportunities to network with their fellow industry peers and experts. Explore the session tracks, and book your accommodations on the Better Buildings Solution Center website. Next slide.

We'd also like you to check out season one of the Better Climate Challenge Road Show. Our industry experts hit the road to see how partners in the Nashville, Tennessee area are reducing their emissions. Watch as we visit Nissan, Whirlpool, and Chemours to see decarbonization in action. Are our partners on their way to meeting their goal of reducing emissions by 50 percent in 10 years? Will our hosts survive trying Nashville hot chicken? Tune in to season one of the Better Buildings Solution Center to find out. Next slide.

With that, I'd like to thank Laura very much for taking part, and for her time to be with us today. Feel free to contact our presenters directly with additional questions, or if we couldn't get to your questions during the Q&A session. I encourage you to follow the Better Buildings Initiative on LinkedIn and Twitter for all the latest news. You can find our handles by their respective icons on the left-hand side of the slide. You will receive an e-mail notice when

today's recordings, slides, and transcripts are available on the Better Buildings Solution Center.

Thank you, everyone. Have a great day.

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