[Begin transcription at 0:01:09]

Maria Vargas: Hi, everyone, and welcome. My name is Maria Vargas, and I'm the director of the Better Buildings Initiative at the U.S. Department of Energy. We are thrilled to have you all join us today at the first of our webinars occurring in the summer. We appreciate everybody being here, and today's webinar, if we can go to the next slide, is a really fun webinar for us to do. This is the second or third year we've done this webinar, and this is really the opportunity to hear some of the most popular sessions from this year's Better Buildings Summit. We have three speakers who were highly rated at this year's summit, and it is our pleasure to bring those folks to you for a command performance of the presentation they gave at the summit. Before we jump into that, one of the things we try and do, if you've joined us for a webinar in the past you will know, one of the things we're committed to doing pretty much in everything we do in Better Buildings is making it interactive with those folks that have tuned in.

One of the things we'll be using for this webinar is an app called Slido. If you will go to slido.com – you can do that on your computer, you can do it on a mobile device – if you will please go into Slido, because we're going to have some polls, and Slido is also the opportunity and the venue in which you are going to ask our panelists questions after they give their presentations. I'm going to give everybody a minute to go to slido.com. It asks you to enter an event code, and it's just DOE. If you will do that, that would be great. If we can go ahead to the next slide, while everyone is opening Slido and getting it running before our first question, I thought we would just remind folks where these speakers were before that their presentations were given, and that were highly rated.

In April of this year, we hosted our annual meeting. It's the Better Buildings, Better Plants Summit. For those of you who were able to join us, you know it's really the big event that we do every year that brings our partners together. We have over 50 sessions, over 140 speakers. Most importantly, it's the opportunity for our partners and key stakeholders to talk, to share ideas, and to really discuss what they're doing in their organization and learn from others facing similar challenges, or learning from the success others have had, whether it relates to energy efficiency, decarbonization, how to finance a project, a technical issue or challenge they've had, and workable solutions that allow us all to benefit from each other's work and to learn from each other. That's really what Better Buildings is all about.

All of the sessions, all of the slides in those 50 sessions are now available on the Better Buildings Solution Center, so all of what you're going to hear today, in addition to all the other presentations that were given at the summit are available for you, and we encourage you to check those out. Again, today's webinar is really the opportunity to just revisit the summit for three of the presentations that were given, and we're just delighted to have today's presenters with us. Before we go to our first presenter, we thought if we could ask our first poll using slido.com. One of the things, given the challenge with webinars, is we don't know who you are, the audience. If you will just tell us a little bit about you, what sector best describes your organization. Just tell us who you are so that our speakers have a feel for the different parts of the U.S. economy that are listening in. Look at that. I love real time. Local government, lots of utility organizations, great. This will continue to evolve and grow. I love it.

Some in the industrial sector, some in the multifamily sector, some in the federal government; across the board. I'm just going to wait a minute. Some nonprofits, some utilities. Local government is still the biggest attendee bucket, if you will. Well, that's great. One of the things that we like to remind folks, as we do work in the Better Buildings Initiative, and as all of our partners are continuing to lead by sharing the solutions, it's so important to know that solutions work for you, or could work for you, regardless of where they come from. It's the sharing, it's the networking, it's the solution center that we offer that really does allow you to take advantage of solutions that others have found, whether they're in your sector or not, and so this is very helpful to know who you all are. It's terrific to know that organizations across the economy are interested in learning from others, whether they have your kind of perspective or building type or not. Lots of solutions are ultimately shareable across different sectors of the economy.

Okay, thank you all for taking Slido. Keep it open. We will ask you to submit questions to the panelists, so you can type those in anytime as you have them. We'll take perhaps one or two questions after each speaker, but, really, we'll try and do the Q&A at the end. The other thing I would ask for folks, the last note before we jump in, we do have a couple announcements and other opportunities that we're going to talk about at the end of the webinar, so please do stay with us. There are working groups that we want to let folks know are underway, as well as a few other things, so please stay with us. But, without further ado, I would like to turn the podium, if you will, over to Stacey Baumgarn at Colorado State University.

Stacey, again, like all the speakers, was one of those audience favorites this year. With that, Stacey, we would love it if you would help the audience learn about how to best tell your decarbonization success story. Take it away. Thanks, Stacey.

Stacey Baumgarn: Thank you so much. Can you hear me okay?

Maria Vargas: Yeah.

Stacey Baumgarn: Great. Perfect. Okay. Well, thanks for joining us, everybody. My name is Stacey Baumgarn, Campus Energy Coordinator at Colorado State University, so I am in the higher-ed sector. I work here in Facilities Management on everything related to our efficiency and conservation efforts, as well as help to craft and draft our climate action plan, conduct our annual greenhouse gas emissions inventory, and sometimes help to write some policies that help us lean in the right direction for the types of goals for sustainability that we hope to implement and achieve here at Colorado State University. On the next slide, I'll tell you a little bit more about this presentation.

This is one of four different decarbonization success stories that we shared, or that was shared at the summit. Again, representing higher education, but also trying to give an example of a success story coming from facilities, but also something that connects our institution to many broader audiences, and where we have shared goals between our community, our institution, the state of Colorado, even globally around decarbonization and how we can work together to achieve those outcomes. Just really quickly so you're all familiar, or a little familiar with Colorado State University, we have just over 30,000 students, depending upon how you count them, over 7,500, or right around 7,500 employees, depending upon how you count them. Our campus spreads across the state of Colorado but is inclusive of about 13 million gross square feet, and we've kind of got one of everything. We've got old buildings, or buildings from the 1800s, and brand-new buildings. We're spending about $23 million a year in utilities, so it's not insignificant.

I want to mention, too, importantly, we have this carbon neutrality goal of 2040, and we have a 100 percent renewable electricity goal by 2030, so that's the context around this effort, and why implementing a solar project really matters. This is really critical, I think, and we're really fortunate here at Colorado State University where our sustainability efforts have really been baked into who we are and what we do. It really has become a sustainability

culture at Colorado State University. When we survey both our students and our employees, it's reflected back to us that sustainability is important to them, and they are looking to us in facilities and as an institution, to deliver on the things that matter the most to them. Sustainability and those initiatives really do make a difference and matter, both, I think, from attracting students who want to then come to the university and participate in these things, and I think that can be true with faculty and staff, too. People who want to participate in this culture, here we are.

The project I'm talking about, we call it Solar 2020, real creative name, but this is a project to implement 20 different solar arrays across three difference campuses, a total of 4.2 megawatts, and, really, it's an interesting challenge because we're talking about something that people really can't see. For the most part, these are on the rooftops, and there are very few places on our campus that you can actually see the solar that's on the rooftops, unless, of course, you have the fortunate opportunity to fly around in a helicopter or plane, or borrow a drone. When you're communicating and trying to tell this story, of course there is the activity itself, what are the impacts, and what's the goal? What is the context of why you want to do it? We need to tell people a lot about the project, and there are different audiences all along the way. Of course, many of you know this, who are doing any kind of project, but it might be just the RFP. Why do you want to do an RFP? How do you get permission to do all this stuff?

Once you get that, then of course as soon as the project starts, then we're talking about safety and fences, and traffic and noise, and all these other things that come along with that. There are lots of kind of communications that aren't as much fun, or aren't as interesting, but they're really critical to helping the project be implemented effectively. There are internal and external communications before. Beforehand, of course, it's that internal stuff, for the most part. E-mails directed to the buildings, "Hey, there is going to be noise on your roof." Also, it's important to say how we're connecting this project to our broader goals and initiatives, and if you get rerouted for a little traffic, why that matters, why it's important. Don't be frustrated. This is helping toward the outcome that we want. Of course, afterwards, then projects like this are real photo-heavy, so people don't need to have a lot of words, they want to see the pictures, and there is going to be video, hopefully, and we even got on the TV news, but more about that later.

I'll show you a couple gratuitous pictures. Here are just a few of the arrays, but you can see here is an array on top of a parking

garage, or out in a sheep pasture. By the way, that center-bottom picture there, that is an active sheep pasture. It's one of the opportunities to demonstrate the use of solar and agriculture, so agrivoltaics. We didn't take any land out of use. They can still graze sheep underneath those panels. Here are just a few more, but you can see in most cases, all the panels are up on rooftops where folks just aren't going to see them, so it became really important to have lots of great pictures, both during and after. Once you've set it all up and get it going, and of course there can be, sometimes, years of effort just to get to this point, but once the project is implemented, because we had a big project, we're the land-grant university here in Colorado, when we wanted to have a celebration, we invited the governor.

It was great that he came because he was also then able to tie our project and our initiative, and recognize our goals for sustainability and one hundred percent renewable electricity, and carbon reductions with state of Colorado goals. We really were kind of showing that synergy that can happen, and the role that all entities have to play in helping us reach these broader goals. The best part about this celebration is all of the workers, all the guys and gals that were doing the installation, everybody came, so we had both the folks that were doing the work outside and on the rooftops, as well as the procurement people who helped us at the very beginning. It was just a really great way to say thank you to the whole team, and all of the people that contributed to this project.

Here is one of the ways that we are communicating about this project through our external audiences, and kind of internal audiences, too. This is just a screenshot of our campus maps, and, on our campus maps, we have a number of different layers that folks can turn on to learn about sustainability at CSU. Well, one of them is just a solar layer. If you go to our campus maps webpage, you can click on any one of those sunshine icons and you can see all of the details about that solar array: how many kilowatts is it, how many panels are there, and a picture of the array. We have lots of students that want to ask questions about what we're doing, how we're doing it. Well, here is a way where we can just make all of that data publicly accessible so people can see, "What's happening on my building, or the buildings around me?"

I'm going to just kind of skip through this because it's not a very exciting slide to look at, but I just wanted to say here are a bunch of articles from CSU that happened, and, if you get these slides afterwards, which you will, you can click on any of these links if you want to see some of the examples of what these different

articles look like. But just different stages and phases, and the types of messaging we were using to communicate about what we were doing, why it mattered, and how we're going to do it, and we hope that you're going to participate along with us. What's also interesting, then, is there were lots of articles and information that came out from our partners. Whether you're in higher ed or local government, or anywhere really, the partners that you work with, the solar installer, the financier, anybody, they also want to help you tell that story, and so work together with them.

We had almost more articles from outside entities than we did from our own internal communications, and I think that's a really exciting thing for both us and each of our partners. I will mention, down at the very bottom, the last thing, you might find your way to the DOE Solution Center. We worked with some folks at DOE over the past years, and together helped write this case study about a solar power purchase agreement at Colorado State. This project that we were just talking about, we wrote a case study about it, but it's all the steps that you might go through. If you haven't done a project like this and you want to, we think this case study will really help you walk through those steps.

Okay, last slide, I think. Yeah, that's it. There it is. There are some links in there about our sustainability projects, more about solar at CSU, and a link to that solution center thing. Thanks very much for tuning in today, and I look forward to hearing about your successes in the future. Thanks so much.

Maria Vargas: Thank you, Stacey. I think you can see why Stacey's talk was quite popular. So many of our partners, including, I'm sure, many of you, are doing great work. A key part of that work is not only involving the community, as Stacey was saying, and getting them involved, but also telling the story, making sure people know what you're doing, not only, as Stacey said, so they may want to work at your organization or become engaged in your efforts, but also so they can feel good and understand what's being done at a local level to really drive a better environment climate for all of us. I do not see any questions in Slido yet, so, Stacey, we're going to move on to Maia. Thank you so much. Hang on. Just as a reminder, if folks do have questions, please feel free to type them into Slido, and then we'll make sure our panelists get to those after they speak. Next up is Maia Roberts. Maia, we appreciate you being here. If you'll just walk us through how the work you've done to engage residents in multifamily projects, we are waiting to hear from you. With that, Maia, it's all yours.

M. Shanklin Roberts: Good morning, everyone. Great to be on the call and to Zoom with you guys. I think this is a wonderful presentation to follow, Stacey's. I think his point about seeing these projects and trying to explain projects that people can't see is a lot of the work that we do in the multifamily space, and it's not just about what people can't see, it's what, for them, doesn't necessarily affect their day-to-day lives in a very practical sense. My name is Maia Shanklin Roberts, as Maria mentioned. I am the VP of development for POAH, Preservation of Affordable Housing, and we specialize in affordable housing projects. These are projects that are designed and have preferences for, or are targeted to, people who are low-income.

That, across the nation, means different things for a lot of different folks, but particularly in my projects, there is some sort of covenant that requires them to be designated for persons of low income. That's the space that I am in, and so when we talk about decarbonization, when we talk about resiliency, this is, of course, an aspiration that we have for all of our projects, but it's not necessarily something that a lot of our residents is top-of-mind or priority. Stable housing is of course something that they're focused on first, and so this conversation around engaging them in this process is something that is a bit unique, and something that we are working to master and learn how to do better. I'm going to focus more particularly on the Barry Farm Redevelopment.

I am stationed here in Washington, D.C., and one of my projects is the redevelopment of Barry Farm. Barry Farm is a former public housing project in Washington, D.C. It's located in Southeast D.C. That's the quadrant of the city that it's located. To give you some context of what this means, there were 440 public housing dwelling units on this site. Southeast, as a whole, is a pretty low-income, high-poverty area. Mostly black people live in this community, and so this project, when we became the master developer for the site, was a very contentious project, because there is this overall concern around displacement, overall concern around, "What is going to happen to the people that live here? Are we just promoting and encouraging gentrification, and is this community really for us? When this gets rebuilt, is this space going to be a space for the residents that live there, for the generations of residents that have lived on this site?"

Barry Farm was a community established by Freedmen in 1865, and it has, through urban renewal, transformed from having this place of black home ownership, transforming to a public housing community that folks lived in from 1940s all the way to 2019,

when the site was demolished, and so POAH has been working on this site since 2013. You can imagine, just in terms of resident engagement, it's been ten years that we have been engaging residents and talking to residents about what's happening here, and even before us, the city has been trying to talk to residents, engage them about what's going on. You can just think about this, right? Fear, anxiety, "What is going to happen to our neighborhood, our community?" and so community engagement, resident engagement is so critically important, making sure that we're being clear about what we're doing, especially in a process that is uncertain.

The development process, as I'm sure many of you know, is very uncertain. There is a lot that folks can see, and then there are years of things they can't see. But what we have been promoting, of course, is what is to come. On this site, there will be 380 replacement units, 420 additional affordable units, home ownership units, and 40,000 square feet of commercial space. For many folks, that's exciting, right? This goes from this very low-income, high-poverty community to something that's going to transform, and our goal, as housers, POAH's goal, is to ensure that residents are retained and empowered, and offered economic mobility, that also that we're building a very resilient and sustainable community.

But in terms of the hierarchy for residents, especially those residents that are displaced, for them, kind of what I put on this slide, it's kind of their primary focus. It's what they can see, it's what they can feel, it's what they need at the moment. We need housing, we need employment, we need to be healthy, we need to be able to have education, and so those are the things that they're primarily focused on, while we as a corporation, and as housers and as developers, are also thinking on this macro level about, "What are we building, and what is this built environment going to become, and how do we ensure that it's sustainable?"

I wanted to just put this quote up on the screen. What you see on the slide is Barry Farm, kind of where it's located, and anyone familiar with kind of urban renewal, you can imagine that this site is physically isolated by a highway, very difficult to access. The black-and-white photo is a picture of Barry Farm prior to the demolition, so these are 1940s homes with not much insulation, not intended to withstand multiple years of use, but this was home for many. This quote from Paulette Matthews, who is actually one of the most vocal – I love Paulette – she kind of articulates kind of what I think is kind of the sentiment of a lot of residents, and what they're focused on is – there was a major lawsuit on the site, and so

this is what she's kind of speaking to. She is really concerned, like, "Are we really going to have equal justice, equal rights? Is this going to be a place for us, and are we just being kicked out?"

For me, as a developer, I am here trying to show all the bright-and-shiny new things. We have passive house, we have solar, we're bringing geothermal, and so for this community – and I am not in the energy space as much – this is exciting, for this one site to have solar panels on each one of the buildings, to have a district-wide geothermal system, to be able to have passive house, for all of our buildings to be passive house-compliant is huge. We're even trying to think about how do we move to net zero on some of the buildings. But this is huge, this is important, but I think contrast that to kind of my prior slide, where the resident is ultimately concerned mostly about stable housing, are they going to be able to maintain and stay in this community.

What does this look like in practice? We know that in coming into a neighborhood, coming into a low-income community, just coming into any community, I think Stacey mentioned university students, there is always going to be a myriad of concerns, and that priority of concern depends on the stakeholder that you're engaging. In my space, my stakeholders, of course, are the residents. They're also government agencies, they're particular partners that we want to engage, there are construction and design partners, but kind of the meat of it is also to make sure that the folks that are going to live here in the long term appreciate what we're doing, and are also good partners with us. We can help to move them beyond just the focus on, "Am I going to be stably housed?" and that fear, and transform that fear to make them empowered to be able to talk about, and good stewards of, the neighborhood that we're creating.

I think, for me, what this process looks like is, first, truly acknowledging the trauma, and for different stakeholders, trauma can mean different things. Acknowledging what is their primary concern, what is the trigger when we're talking about very new, bright-and-shiny things? From there, us being able to state our goals and objectives, you know, what are we trying to accomplish, and then we're listening. You're stating what it is that you need and desire, what are your primary concerns, and then we're staying kind of our goals, and we're having this two-way conversation. I will say that I've been working on the Barry Farm project since 2022, and I should have kind of numbered this if this a bit, you can go from Step 1 and 2 many times, way before we even get into the

substance of the actual development, or the actual public benefit that we're trying to create.

We may have a number of community meetings where all we're doing is acknowledging the trauma, acknowledging where we've been, what are the goals, and use creative ways to kind of pull that out of community using charettes or using different types of active methods to get folks moving around and talking about what their feelings are and those concerns. At the same time, you're kind of reiterating, "We're going to be good partners with you. We want you to sit at the table." I think Stacey's slide about what they have done in terms of presenting that to students so that they can see it, we also have a website where we're trying to be as clear as possible for residents, and all of our stakeholders, where we are with the project and where we're trying to go. We kind of foster engagement through consensus-building.

Once we felt like we have listened, we have learned from each other, we have a good sense of what our baseline expectations are, then we can start building forward and trying to ensure that we are going to be on the same page as we move forward and continue the development. As we start thinking about things around, "This passive house building, how does that affect your day-to-day lives, and how you all should be thoughtful about water usage," because all of that is the next level of conversation so that we can ultimately achieve our goals and objectives. We know that to move this project forward, to satisfy our goals as developers and good stewards of the community and the environment, we might be a little bit beyond where our residents are, or where the community is, but that's okay because, eventually, we will get to the same place.

We do that in a variety of different ways, but I think this has been, for me, just this circle and reminding myself that trauma is real. Despite the fact that I have all these bright-and-shiny new things, being able to honor and listen is just critically important to this overall community engagement process, especially as we're dealing with, and incorporating very, I guess, high-level issues that folks can't see, can't touch, can't feel in the immediate. That's it for me.

Maria Vargas: Awesome. Thanks, Maia. I appreciate it. We all appreciate it. I love your comments. Change is hard, no matter what kind of organization you are part of or what community you're in, and what we're all trying to do is drive change, so we have a better community, a better organization, better planet. Being able to learn

from you and how you're dealing and sort of moving forward is super helpful, so thank you, Maia. I see lots of questions coming in the chat – sorry, I misspoke – in Slido, so please continue to do that. We're going to move on to our third speaker today. John Hill is from Cleveland-Cliffs, one of our manufacturing and one of our industrial partners. As you can imagine, when we do these summit samplers, we have all different kinds of presentations.

You heard a communications presentation from Stacey, "How will you talk about the work you're doing?" from Maia about how you engage important folks, and John is going to talk a little bit more about some of the technical work they've been doing, as well as other efforts underway at Cleveland-Cliffs. Without further ado, John, I'm going to turn it over to you. Please go ahead.

John Hill: Thanks, Maria. Hi, everyone. My name is John Hill. I'm the senior manager of sustainability at Cleveland-Cliffs. What that means is I'm engaged in putting out our annual sustainability report, coordinating greenhouse gas reporting and accounting activities, and engaging in strategi decarbonization initiatives across the footprint, including working with the DOE through the Better Buildings program and Better Plants program, as well as the Better Climate Challenge. Today, I'll talk a little bit about Cleveland-Cliffs, some background on what the steel industry really is to help set the context for the challenge that we are dealing with and the opportunities we have. Then, I'll talk a little bit about some of the activities, and successes and accomplishments that Cliffs has done today, and then I'll talk about some of the ongoing initiatives and bring it home with kind of explaining what worked for us and maybe some suggestions or recommendations for you to consider as you pursue your own goals and objectives in reducing greenhouse gas emissions.

Cleveland-Cliffs is a fully-integrated iron and steel company, from iron ore mining through scrap processing, all the way through iron production and steelmaking. The company produces a variety of downstream steel products that are coated, stamped, tubular, stainless, specialty steels like electrical steels. We'll talk about this a little bit later on another slide. Really, one of the largest segments is the automotive sector. Cleveland-Cliffs is historically an iron ore mining company. It was originally founded in the 1840s, so it's a very old company but it has really survived through innovation, and that kind of ethos has carried through as the company pursues additional challenges, like reducing greenhouse gas emissions. In 2020, the company acquired its two largest steel customers – AK

Steel and ArcelorMittal USA – and then it also acquired a large steel scrap processor.

The company completed its first direct-reduced iron facility in Toledo, Ohio, in 2020, through the midst of a pandemic, and kind of sneak peak to the later slides, our first greenhouse gas goal was achieved ahead of schedule. Then, additional context for Cleveland-Cliffs, we are the largest energy consumer in the Better Plants program, and we were the first steel producer to join the Better Climate Challenge, so a big opportunity, a great partnership with the DOE. I would encourage everybody to continue to participate and engage with the DOE on all of their different programs. Really a fantastic partnership. This is kind of a map of where all Cleveland-Cliffs' facilities are. You can see it's mainly located in the Great Lakes region, iron ore mines up toward Minnesota and Northern Michigan, with the bulk of the steel production spread across Illinois, Indiana, Ohio, and Pennsylvania, with a few facilities in the south.

Here are some of the major markets I talked about briefly. Automotive is a huge sector, so the types of steels that you're making there range from internal chassis components, exhaust systems – that would like stainless steel. Cliffs is a producer of non-oriented electrical steels, or NOES. That is an electrical steel that is used in electric motors – such as those that go into EVs – a variety of coated products to help be corrosion-resistant, and then exposed automotives, so the steel that you see on the outside of a car. These are really some of the most demanding grades of steel. Steel is not steel is not steel. This is not the steel of the '40s, where everything was essentially the same thing, just a different shade. These are advanced grades that have metallurgical properties, from alloys, they are treated to have certain properties for safety, and they have to have quality specifications for appearance.

When you are making these higher-quality grades of steel, you really need to rely upon a lot more iron ore-based and iron production to meet those demands, which adds additional challenges to Cleveland-Cliffs compared to, say, other types of steel, such as S steel rebar. We also make steel for the appliances sector, packaging. Infrastructure and energy is a huge, growing market for the steel sector in the United States as we deploy additional solar and wind, nuclear, and hydrogen infrastructure. All of that requires steel, and all of that is going to require some of these specialty grades of steel, like the electric steel that I mentioned. Heavily engaged in construction and military

applications. The company makes specialty grades of steel for naval ships and other military equipment.

Putting the iron and steel process in context, and why people often refer to it as a hard-to-abate sector, or a heavy industrial sector, it really comes down to the sheer magnitude of the process and the size. This equipment is physically large, it is energy-intensive, high temperatures, and produces large quantities of product. As you can see here, all of these processes, from the iron ore mines, where we're taking the ore and processing it for use, that's a 2000-degree Fahrenheit process. The blast furnace, BOFs, that's another very energy-intensive, high-temperature process. To give some context of scale, a blast furnace is over 200 feet tall, so these are very tall, massive building-size pieces of equipment at these temperatures that are producing millions of tons of steel a year.

The direct-reduced iron plant I mentioned for Toledo, Ohio, that's also a higher-temperature process, and that is even taller than a blast furnace. In fact, we have to get FAA approval just to permit the construction of this new facility, but it is a fantastic piece of technology. It gives us the ability to produce iron, and I'll talk a little bit about that later. Really, across the sector, from electric arc furnaces all the way up to iron ore production, high-temperature, high-energy demands. The other challenge, or opportunity we have to solve is that no steel mill is the same as the next. It's a heterogeneous sector. They are producing different products, different technologies, different production volumes, all located across different geography. That really creates a situation where we have to look at a bespoke decarbonization plan, and a bespoke set of initiatives to reduce energy and emissions for each respective facility.

The other issue that we're working toward is the low TRL, readiness level, for a lot of alternatives and technologies to help us reduce our footprint further, and I'll touch upon that a little bit later in the presentation. Here is an image. We were happy to host a large contention of DOE staff. This is our Indiana Harbor 7 blast furnace. It's the largest blast furnace in the Western Hemisphere. Just to give some scale of how large this equipment is – frankly, the photo doesn't do it justice, but you get to see how large this is. This is a ten-story or taller piece of equipment producing all of that iron that we need to produce these more advanced and high-quality grades of steel. Now I'll provide some context on Cliffs and the steel sector. I'll talk a little bit more about some of the accomplishments that we've made over the last few years.

I mentioned the Toledo direct-reduction plant. This is a technology that Cliffs is very excited about. This was the first DRI unit built in the Great Lakes region, and only the third unit built in the United States. It produces about 1.9 million tons per year of DRI, or hot briquetted iron, which is a type of DRI. Essentially, what it is doing is it's taking iron ore, which has a chemical composition of Fe203, or rust, and you're pulling off those oxygen molecules so you can make that iron and turn it into steel. In this case, what we're doing is we're taking natural gas, and we're reforming that to make a blend of hydrogen and carbon monoxide that we use to react with the iron and strip off that oxygen molecule to produce DRI.

We then take this HBI and we feed in into our processes – blast furnaces, EAFs, BOFs – and we use this to help reduce our energy consumption at, say, our blast furnaces. It is a lower CO2-emitting process to produce these iron units versus purchasing iron from abroad, which is often imported, and then the other great thing about this technology is it can take some hydrogen to where we can replace some of the natural gas with clean hydrogen to reduce the carbon footprint even further. Really, what that does is it helps us reduce the carbon footprint of the steel-making process for our customers. We can make some investments to consume additional levels of hydrogen, but I'll talk a little bit about some of the other activities Cliffs is doing later on in the presentation.

Recycling. I think it's important for everyone to know that every piece of steel that you see, buy, or use contains recycled steel scrap. It is the most recycled material on the planet. What you can see here is Cliffs is recycling large quantities of steel scrap. We also recycle iron-bearing materials, like dust and sludges that are collected at the site that contain valuable units of iron for making steel. We don't want to throw this out, we don't want to put it in a landfill; we want to use as much as possible for economics, and also just to be responsive to customer interest in having higher recycled content. You can see here these levels are pretty high for the technology routes that I have listed here, and we recycle steel not only from end-consumers, when you put your cans into the recycling bin at home, we also recycle steel scrap and materials from our customers, from the automotive industry, for example, when they have steel scrap and they're producing the various parts and components for their products.

Energy efficiency is another area that Cliffs has focused on over the last number of years. One project was the walking beam furnace at Burns Harbor. We also recover energy through

byproduct gases at a number of facilities, and that helps us generate electricity and steam and reduce our scope 2 emissions. As part of the partnership, we did an in-plant training with DOE staff. We brought in folks from across the footprint, and they went out, learned a number of things, and then went back to their home facilities and identified a number of projects that were either initiated or completed, totaling about 70 million kilowatt hours of energy savings. This all yields a successful accomplishment of our goal ahead of schedule. We had a 25 percent reduction of absolute scope 1 and 2 emissions from 2017 by 2030.

That was accomplished ahead of schedule, and so you can see here on the right-hand side, these are the types of initiatives I just mentioned that really helped us get there, so now, what next, right? That's always the question, "What next? We're not to zero. What next?" Cliffs has not rested on its laurels. We are continuing to do a number of greenhouse gas reduction initiatives. Research and development. I mentioned there is a lot of technology that has to be developed, and so one of the ways that Cliffs is doing this is working with academic, working with universities and the DOE to develop additional methods and technologies to reduce our emissions footprint further. You can see here are three projects that we're looking at using alternative fuels, electrification, really to help lower emissions both from the reheating the steel, as well as the production of DRI.

Here are some more focus areas for Cliffs as we go from now until 2050. Carbon capture is going to play a part. Hydrogen is going to play a part. Renewable energy and electrification of some process heating will all play a part. Really, what it comes down to is I mentioned that bespoke decarbonization pathway for each respective site, and these things are evolving. You are going to regularly evaluate, "Okay, is this the right solution for the facility?" It may change in the future, maybe new options occur ten years down the road, but these are really the focus areas that Cliffs is looking at to help reduce our emissions further across the footprint.

Hydrogen is really a big focus for Cliffs right now, and it's a big focus for the DOE. We're trying to really build the hydrogen economy in the United States right now, and Congress and the DOE have really allocated a lot of funds to growing the hydrogen economy. The Hydrogen Hubs initiative, you may have heard of, they had about $7 billion dedicated to those. Two of the hubs that were selected for negotiations are where Cliffs is located, and so we're working and talking to those people that are working to build

the hydrogen economy and build production of clean hydrogen. Next, I will just say that we are putting our money where our mouth is. We put trials at our blast furnaces for hydrogen use, and we've also invested $10 million in building a hydrogen pipeline. What that really does is gives us the ability to use hydrogen as these producers build up their capacity.

This brings me to my second-to-last point, which is because of all these initiatives, because of the fortunate selection of a couple of our projects for funding from the DOE, we established new goals that are here. You can see that these are intensity-based goals for Scope 1 and Scope 2. We have an intensity goal for Scope 3, and, lastly, we have a near net zero goal for 2050. This brings me to my last slide. Really, these are the types of things that worked for us, so I would encourage you to be bold yet realistic. What I mean by that is set goals that you think are aggressive that you can achieve, because success breeds success. You can build upon that success and push a little bit further each time, and develop your technology and solutions. Embracing change, reevaluate the way that you're doing things. Maybe there is a different solution, or ask why have you been doing a production process in a particular manner, or using an energy source in a particular manner.

Lastly, this is a huge challenge for everybody – collaborate, collaborate, collaborate. Reach out to your stakeholders, reach out to your suppliers, reach out to your partners and find ways to work together to solve this. It's a huge undertaking but, really, it can be done. I think Cleveland-Cliffs has demonstrated that goals can be achieved, and, once you set those goals and achieve those goals, it prepares you for your next set of goals until we move to 2050. That's it.

Maria Vargas: Awesome. Thanks, John. I think all of the speakers today not only did a great job, but it was so interesting how you all talked about collaboration as a key part of your activities, and so I think there is a really important takeaway there. I've been sort of tracking the questions and there are a lot, so I'm going to ask the speakers to now just come on camera, if you would. Please do continue to submit Q&A, but we've got a bunch and so I'm going to encourage the speakers to be quick and brief. As Shakespeare says, brevity is the source of wit, but I want to try and get through as many of these questions as we can. Stacey, the top upvoted question was for you, but there were questions for each of the speakers, so what I'm going to do is have Stacey see if he can't tackle the top one. Stacey, folks are asking about some detail on your power purchase agreements.

This is the collaboration question. Tell me about who are the parties, how are the solar developers involved, who is getting the credits, and how are they paid? A little bit of insight there, and then I want to come back, Stacey, after you're done, and ask each of you what do you wish you knew before you started, and then hopefully we'll get to a specific question for Maia and John, because those are in the queue, as well. Stacey, would you mind kicking us off and telling us a little bit about your power purchase agreements?

Stacey Baumgarn: Sure, you bet. Obviously, a great thing about a power purchase agreement is the university doesn't need a bunch of cash up front. In this case, our RFP was to seek a partner to have create a power purchase agreement, and so the person, the respondent that we selected was actually a company called Solaris. Solaris became the financier, the developer, kind of the project designer, and then we worked with a solar company – I mean, they hired a solar company, which is Namaste Solar here in Colorado. Of course, soon after the project was completed, Solaris sold the PPA, they sold the contract to a longtime holder of that contract, which is Standard Solar. Standard Solar is now officially our partner, but it was the good work of Solaris and Namaste that got us to where we were. I'll just mention, too, it's a 28-year power purchase agreement.

Let me just say, because I'm so proud of this, zero percent escalator, and we retain the RECs. That's amazing. I mean, that's an amazing project and an amazing contract. I'm not sure if you can get it in the marketplace today, our timing might have been perfect, but you never know. These things go around, come around. I'll stop there, to be brief, but please, check that case study on the Solution Center, because all of that information is outlined kind of step by step of how we went through each of those things, selected partners, worked with the partners, and who played what role in the project. Thanks very much for that question.

Maria Vargas: Thank you, Stacey. That was terrific. Now I'm going to take back what I said. We had a question for Stacey, and John, I'm going to give you the next question, and then Maia, you've got the next question in the queue after that. We'll end, I think, with, "What do you wish you knew before you started?" just given the timing. John, you can see the question, which has been uploaded a couple times, "How has Cliffs' initiatives impacted the marketability of its products for customers who are interested in mitigating embodied carbon (scope 3 emissions)?" Can you speak to that a little bit?

John Hill: Yeah, sure. There is really a huge interest in companies trying to reduce emissions up their supply chain. What we've seen is a lot of interest from customers wanting to know more about what we've done and what we intend to do. What that does is I think it helps convey kind of the added benefits of buying steel domestically. Right now, I think one of the things that a lot of people don't realize is that the U.S. steel industry is a leader in sustainability compared to global peers, and the industry is not behind, it is actually ahead. All of these initiatives that I talked about today, all the activities that DOE is focusing on, it's about maintaining that leadership and advancing that leadership. Really, it comes down to another point for customers to say, "Hey, this is why I'm buying steel from the United States. This is why I'm buying steel from Cleveland-Cliffs. It meets my specifications, and it has lower emissions. It's helping me as a customer achieve my own scope 3 goals." I would say, generally, there is a lot of interest in understanding emissions.

Maria Vargas: Interesting. That's great, John. Thank you, and then Maia, over to you. There were a couple of questions or comments, very supportive, thrilled about you doing the passive house project, so maybe we'll roll two into one. "Are all the buildings at Barry Farm in the passive house standard," and then, "Did you meet much resistance? Will this project be connected to utilities? How did you get those standards incorporated?" If you can touch on those, that would be great.

M. Shanklin Roberts: Yes, so all of our multifamily buildings will be built to passive house standard and will be seeking recertification. We found some difficulty with doing the rental flats project, which are the two-over-two townhomes. It's just kind of aggressive given our budget, but yes, all of the vertical 100-plus unit buildings will be designed in passive house standard. In terms of resistance, no. I think it is something that POAH is committed to, so we are, on all of our projects, designing to passive house standards and being as aggressive as possible on trying to reduce energy demands. So no, I think this is something we said we were going to do, and then we put it in our plans and specs and finding money to pay for it. Will this project be connected to utilities? Yes, it will be connected to utilities, as well as solar.

Maria Vargas: Awesome. Wow. You guys are such great speakers. You're quick. You all have the soul of wit, so thank you. I appreciate it. Then, just maybe bringing us home as you look forward, just thinking about what do you wish you knew before you started, and what

will take you into the work you continue doing for your organization? Maybe we'll just go in the order of speakers. Stacey, do you want to just kick us off? What do you wish you knew before you started, and then we'll go to Maia and John, and then a couple of slides and we'll be done.

Stacey Baumgarn: I guess in the context of this specific question, doing a solar project, it has a long lead time. It takes a long time to line up everybody to agree that now is the time to do it. Then, like I said, we did get very lucky with our timing, I would say. However, if we had known the price of steel, and if we had known John, maybe things would have come out differently, because when we initially scoped the project, we had a number of parking lot canopies in the mix, several megawatts of parking lot canopy. But, unfortunately, again, this is the timing, market conditions, not John's fault, the price of steel just prevented us from pursuing that at that time. I should mention the context of that, too.

The price of electricity is actually very low here in Colorado, and we have a fantastic municipal utility, and they do a great job of giving us inexpensive electricity, which can be a bit of a challenge when you're trying to deploy a solar project because – anyway, you get the math. Anyway, if we had known some of those things, we might have scoped and scaled our project a little bit differently, but, overall, we're still very pleased with the outcome. Thanks very much.

Maria Vargas: That's awesome. Thanks, Stacey. Maia?

M. Shanklin Roberts: I think little bits of me wish I was in some of the initial resident meetings to really understand what folks were feeling a couple years ago when we started the project, but I think now, living where I'm at, I think – I don't know. Maybe that, like if I had a good transcript, that would be helpful, to kind of come in and better be able to address folks' concerns, because folks are constantly bringing to my attention promises, et cetera, that were made in the past. But I think that has fueled me to want to continue that discovery, and create a project that is satisfactory to all and that everyone feels good about.

Maria Vargas: Awesome. Thank you. John?

John Hill: Yeah, so I don't know if it's what I wish I knew. I guess what I wish would have happened is I wish Cliffs would have entered the steel industry sooner, because the executive team was so supportive of all of these initiatives, and there was so much

progress. I came from another company before Cliffs, and there were some activities, but it was tepid. Really, having the management team's support is so important. It really is so important. I don't know if that's what I wish I knew, but I wish we could have got started on this, say, ten years ago.

Maria Vargas: Awesome. All terrific answers. Well, thank you, again, to the panelists. We really appreciate your being here. I just have a couple more slides to share before we close things out on time. There we go. One of the things we're excited about, thinking back, this really was a summit sampler, but one of the other things that we did at the summit that we do for our Better Climate Challenge partners is offer new working groups. These working groups come from our partners' requests for issues that they're grappling with and really want to convene a SWAT team of their peers and other stakeholders to help address. The three working groups we announced at the summit, you can see them there, they're Central Plant Decarbonization, Shifting to Low-Impact Refrigerants, and Financial Analysis for Industrial Decarbonization.

Those working groups are now, as of today, registration is open for those, so you can either scan the QR code, or if you don't have time to do that, you can go to the solution center to learn more or sign up. Again, these are working groups for partners that are working with us as part of the Better Climate Challenge. Sign up now, but work on these working groups starts in the fall, so you have a little bit of time before we start work. Please, if any of our climate challenge partners are on the phone, please feel free to sign up for one of those. These working groups have had tremendous success in really coming up with good resources to move more expediently in really hot topics on decarb. Just two other quick slides and then we'll adjourn.

Just wanted to remind folks this was the first of the webinars we are doing over the summer, so again, on the Better Buildings Solution Center, we have all the dates and topics coming up. But, if you'll join us, we would love to have you at the rest of the webinars coming up this summer. Then, finally, the next webinar we've got is on building performance standards, and talking about those as policy tools. All right, truly the last slide. Again, thank you to our speakers today, Stacey, Maia, and John. We really appreciate it. The speakers today have been generous enough to include their contact information, so if you have questions that you are dying to sort of talk to them about, feel free to e-mail them.

You can also e-mail us. You can see all those links on the left side in the blue box. With that, I just want to say thank you, again, for our speakers today, not only for being such great speakers at the summit, but being willing to share your presentations again with a larger audience on today's webinar. Thanks to everyone. Enjoy the rest of the week, and we appreciate your being with us. Thanks again.

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