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Una Song: Hi, everyone, thanks for joining us, today. My name is Una Song, and I'm with the US Department of Energy's Better Buildings Initiative Better Communities Alliance, which is a partnership that brings together public and private sector leaders, to deliver energy efficiency, sustainable transportation, and renewable energy solutions. I'd like to welcome you to the February edition of the Better Buildings webinar series. In this series, we profile the best practices of Better Buildings Challenge and Alliance partners, and other organizations working to improve energy efficiency in buildings. Today, we'll be talking about resiliency, a topic that is on the minds of many Better Buildings partners. Certainly, the natural and manmade disasters, like some of the hurricanes we had last year, have contributed to the increased focus on resilient building design, by developers, building owners, and even BCA *[audio cuts out]* local government partners. Within the Better Buildings Initiative, we have a couple of efforts that are focused on resilience. The first I'll mention is our combined heat and power resiliency accelerator.

CHP can play a vital role in ensuring emergency response services are available and critical infrastructure maintains needed energy services, to remain operational during disasters. This spring-summer, the accelerator will be launching an online tool that helps local governments identify critical infrastructure, and determine the feasibility of CHP to increase the energy resilience of the infrastructure. We are also working to develop a Web page that will aggregate DOE resources that can assist in increasing resilience within the built infrastructure.

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Today, we have a great set of panelists, that will share with you some of the strategies that can be used to address resilience. We'll hear from Jeremy Sigmon, from the US Green Buildings Council, on the work they are doing to help owners and developers increase the resilience of their buildings. He will also highlight some of the work they are doing with other partners, to help cities increase the resilience of their built infrastructure. Next, we will hear from Charlene Heydinger, who is with the Texas PACE authority. She will be giving a brief overview of Property Assessed Clean Energy, or PACE, financing, and what she is doing in Texas to encourage the use of PACE for resilience projects. Rachel Davis from Petros PACE Finance is our final speaker, and she will

provide an overview of some of the measures that qualify for *[audio cuts out]* the benefits of using PACE, and some examples of how PACE has been used to finance resilience projects.

So, let me go ahead and introduce our presenters. We're gonna start with Jeremy Sigmon. He works with USGBC and its community of advocates, to advance green building policy at the state and local levels. As director of technical policy, Jeremy oversees USGBC's grassroots advocacy network across all 50 states, to advance USGBC's mission of green buildings for all, within a generation. He is also leading the organization's efforts on city and community resilience, and continues his longstanding support of lawmakers seeking to advance green schools policy. Charlene Heydinger will be our second panelist. She is president of the Texas PACE Authority, the nonprofit administrator of Texas PACE programs. She is also the director of Keeping PACE in Texas, where she leads the PACE legislative effort and the collaborative PACE in a Box model program design process, involving 130 stakeholder volunteers. On Capitol Hill, Charlene served as general counsel to house republican leader Bob Michael, minority general counsel to the Senate Judiciary Committee, and minority counsel to the Health Judiciary and Energy and Commerce Committee. Rachel Davis is our final presenter, and she is a business development officer of Petros PACE Finance. Rachel is based in Houston, and focuses on building the PACE business in Texas and in other select PACE markets throughout the country. Most recently, Rachel led a national business develop team for NRG Energy, where she and her team pursued partnerships for onsite-offsite solar, wind, community solar, energy efficiency, and combined heat and power systems, with Fortune 500 clients.

So, thanks, again, for being with us, today. Before we get started with our presentations, I just wanted to remind our audience that we will hold questions until near the end of the hour. Please send any questions through the chat box on your webinar screen, throughout the session today, and we'll get to as many of them as we can. This session will be archived and posted to the Web for your reference.

And with that, I will turn it over to Jeremy.

Jeremy Sigmon:

Great, thanks very much, Una, and thanks, also, to the team at DOE's Better Buildings Program, and to all the participants, today.

We can go to the first slide, please.

The US Green Building Council is committed, as many of you know, to transforming the way that buildings and communities are designed, built, and operated. We do this primarily by harnessing market forces that can drive widespread uptake of sustainability practice, across the industry, in US cities, and around the globe. Green buildings enhance resilience, through mitigation, adaptation, and more. Through the use of durable materials and _____ site selection, rainwater management, _____ response, _____ energy conservation, distributed clean energy generation, and so much more, USGBC's lead green building rating system has been promoting resilience activities pretty much since it launched in 1999. Importantly, the process of intentional, thoughtful, and integrative design is the hallmark of the green building movement, and it's helped tackle systemic triple-bottom line risks and harness opportunities. And this is important, because the stakes are high.

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The question, "What is the hottest year ever recorded?" is now usually answered with, "Well, whatever year you ask that question." A changing climate amplifies our risks, and our past predictions are no longer the best model for changing conditions. 2017, as you probably know, was the most costly disaster year on record, fully one-third of US counties declared a disaster, and no matter where you are, your community is likely at risk to at least one of FEMA's six categories of natural hazards, and probably still other risks, like social unrest or economic disruption, or some ugly combination of these and other impacts. Of course, we know that someone pays eventually. The National Institute of Building Sciences recently reviewed 23 years of federally funded mitigation grant programs, and concluded that every \$1.00 spent on hazard mitigation can avoid \$6.00 in future disaster cost. The overall trend, unfortunately, appears to be more disasters, greater intensity and cost, and less money to go around. So, we need sustainability and we need resilience, and we need it now. Like on many critical issues, cities are at the forefront. Here are four leading examples.

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Like much of America, Hurricane Katrina was a defining moment in USGBC's emerging work on resilience. In November of 2005, USGBC convened thought leaders, at our annual Green Build Conference, to imagine a disaster resilience and sustainable Gulf Coast. Learning from this national tragedy, a set of principles emerged that would guide redevelopment conversations in the future. Three among them are: to respect the rights of all citizens

by implementing an inclusive planning process, to restore and expand the national protections of the Gulf Coast, and to provide for passive survivability. Or buildings and communities that facilitate sheltering in place, even in the presence of infrastructure failures. Recognizing the opportunity that schools provide as anchors of community, an early priority for applying these principles was in the smart redesign and construction of green public schools. USGBC established a green schools fellowship program, that has helped to advance more than 50 green schools projects in the city, with thus far 13 having earned LEED certification.

To do this, the city took an innovative approach to redirecting FEMA recovery dollars, towards a set of priority school facilities that would best serve the public. And then, investing those dollars in the sustainability, efficiency, and resilience of those schools. Emerging from great depths, the city released its first resilience strategy in 2015, and has made continual progress and updates. Among other things that sustainability and resilience plan includes is the establishment of a resilience retrofit program for buildings, promoting sustainability as a growth strategy, developing a climate action plan to include a downtown efficiency challenge and a microgrid, building what Mayor Landrieu calls the "great wall of New Orleans," and redesigning regional transportation systems. So, a lot of really good work there in New Orleans.

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In partnership with the Urban Land Institute and the National League of Cities, the US Green Building Council has been cohosting the Resilient City Summit, since 2015. We've learned a whole lot from cities that have participated, and have been humbled by so many of their efforts to tackle both resilience and sustainability. Charleston, South Carolina, is a great example, and they discovered that the older structures in their city performed better than newer structures, in recent storms. So, as a result, the city has placed over 17,000 structures under design review, to see how new structures could learn from old historic buildings and their designs and systems that emerged from local contexts, sometimes called bioclimatic design. Charleston also invested in the social dimension of resilience, by creating and nurturing relationships at the city block and neighborhood levels, that are so critical in moments of disruption and immediate response. Climate and hydrological modeling efforts have further helped the city identify areas that are the most prone to flooding. This has influenced the planning and design of new transportation routes to

ensure continuity of service during future events, and the remodeling has also helped to identify properties that are perpetual risk. And the city has, thus, began proactively purchasing the properties, to enable property owners to relocate, while the city returned the land to natural uses. Once again, lots of great examples from the city of Charleston.

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In Los Angeles, the community has realized that buildings are the central nexus for all of our human activity. Understanding your building in relation to the larger system of your organization and your community is the foundation of the distributed infrastructure that will realistically be needed to support communities both in times of disaster and throughout everyday events. To this end, the US Green Building Council Los Angeles chapter has been leading a program called Building Resilience LA. Available now, the Building Resilience LA Guidebook is helping building owners and operators integrate resilience into their day-to-day business activities. Forthcoming from Building Resilience LA is a more comprehensive system that will include: a coalition of organizations working towards resilience in Los Angeles, case studies, a step-by-step process for evaluating risk, engaging community, and implementing integrative solutions, for both for-profit and community-based organizations at the building scale. Also, a template for adapting the program to other regions across the country, and a whole lot more.

In addition, the Emerald Cities Collaborative is leading a similarly inspired complementary effort, in the Bronx, New York, in Oakland, California, and in Miami, Florida, that leverages anchor institutions, such as universities and hospitals, to improve the health, local economies, and climate resilience of low-income communities of color. These anchor institutions, businesses, and their buildings, can be hubs of resilience in critical moments of need, and also support strengthening skills and community bonds, on a day-to-day basis.

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During Hurricane Sandy, this small city that faces New York City, on the Hudson River, discovered a long list of resilience risks. The storm helped the city develop an understanding that, even if people are told to evacuate, the reality is that some will stay anyway, and the city must assume responsibility. The city has, thus, developed a set of innovative approaches for how the city is thinking about its

public and private infrastructure, and, thus, the development of a downtown microgrid, to ensure operability in any eventuality. To make sure that that microgrid achieves its resilience, reliability, and sustainability objectives, the city has committed the project to peer certification, which is a LEED-like program for power systems, that is measuring and validating much-needed resilience in the electricity sector. The city has also, since, developed resilient building design guidelines for new construction retrofits, that are now required for all building development projects. These codes require a careful consideration of foundations, mechanical systems, streetscape accessibility, wet and dry flood proofing, and so much more, to ensure that the buildings are sturdy against future events.

Hoboken is also hardening, and softening, their coastal protections, with both an active seawall and a series of green infrastructure burns and levees, that serve as new city parks. For this city, water comes from all sides, actually, because its inland neighbors actually drain downhill towards the city, requiring additional creativity in managing water. So, to ensure that all these engineered landscapes achieve the city's stated resiliency objectives, the city has committed the so-called green infrastructure park to site certification, another LEED-like standard, only, for this one, for sustainable and resilient landscapes and parks.

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So, I wanna leave you with a set of tools that are currently available for use from USGBC and our sister organization, Green Business Certification Inc., or GBCI. Right now, you can take advantage of voluntary certification programs, to guide, measure, and validate resilience actions at multiple scales. There's a longer list of these possible programs _____ report on the next slide, but here are several that we currently oversee. New to the family of standards is the "Resilient Action List for Buildings and Communities," which we call RELi for short. RELi helps strengthen resilience to natural hazards, in the design and operation of buildings. We'll be doing much more to leverage LEED and RELi, in the future, to provide further recognition for resilience leadership practices in green buildings. Notably, new research by UT San Antonio confirms that LEED credits and prerequisites in our current version, LEED version 4, provide many opportunities to enhance resilience, already. STAR is a city-scale system designed to drive more effective, inclusive decision-making and results in more sustainable, livable, resilient, and just communities.

The core content of this program, that has been comprehensively applied in more than 70 communities across the US, is now being integrated into USGBC's city scale measurement and assessment tool that we call LEED for Cities. Finally, a global real estate sustainability benchmark, or GRESB, is already being used to boost transparency of sustainability risk and best management practices, for more than 800 companies and funds with several trillion dollars-worth of assets under management. Next month, we'll release a new resilience module, which will help real estate and infrastructure companies and funds better understand resilience risks and make informed investment and management decisions.

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So there's lots that you can do today to prioritize resilience in your buildings and communities. I've offered a few hopefully hopeful resources, here, and my contact information on the next slide, and I welcome any further questions during the webinar or at any time.

So, thank you so much, and back over to you.

Una Song: Okay, great, thanks so much, Jeremy. We'll now hear from Charlene, on what she and her organization are doing in Texas to encourage resilience projects using PACE.

Charlene Heydinger: Thank you, Una.

Let's go to the next slide.

What I wanna share with you, today, is how Texas approached this economic development tool called PACE, Property Assessed Clean Energy, and why.

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And hopefully there's something in here that you can use in your state and in your location, as well. So, one of the reasons that PACE is so important in Texas is, if you look at this US average consumption and compare it to Texas, you'll see that our industrial sector uses 51 percent of the energy consumed in Texas. And a lot of that is our petrochemical community along the Gulf Coast – it takes a lot of power to make power.

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And despite Harvey, most of Texas is again in a drought. But when our commercial and industrial pay statute was passed in 2013, water was a driver, so I encourage those who are drafting PACE legislation to consider water as well as energy savings.

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And at the time, in 2013, what was really driving recognition that we needed to make better use of our energy and water resources was the dramatic growth in population, and trying to ensure enough power and water for all of the new businesses and new citizens moving into Texas.

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So, what is PACE? Generally, it is long-term financing, a way to pay for capital projects, without having to use any of the company's own funds. So, it's 100 percent financing over the long-term; it's upfront financing. And the idea here is that, if you can stretch out the payments for these energy and water efficiency and distributed generation projects, the projects will pay for themselves. It's a way to not only lower operating expenses but overcome the hurdles that prevent businesses from becoming more deficient, and, really, dealing with deferred maintenance. And it's a national issue; it's really a worldwide issue. So, what is it in Texas? You can use PACE financing for energy efficiency, water conservation, and distributed generation. And much of the distributed generation opportunities creating power onsite also lead to significant resiliency. In Texas, you can this program for commercial properties, which include nonprofit, hospitality, healthcare, for example, industrial, which includes manufacturing, and agriculture, and multifamily, which are apartment complexes with at least five units. The way this works is that the cost of these improvements is transferred, the liability to repay, is transferred from the business itself to the entire property. And the property is obligated to repay that through the local government, and the assessments then can be stretched over the useful life of those improvements.

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So the idea is, if you can lower your utility costs, you will increase your net operating income. And the bottom line is, you increase your building value and you lower your ongoing operating costs. And you can do that without having to use your own capital or

compete with growth or your basic core business, in order to make these improvements.

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So, PACE, unlike a conventional loan – which would be the orange line – or paying for the entire project – which is, in this example, demonstrated by the yellow line – you'll see the PACE line enables an organization to repay these improvements, and always be in a cashflow positive situation while they do it.

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So, in Texas, we created a model that was really designed by the private sector, local government representatives, our local lenders were at the table, and it took about a year to create, but the result is a small government program that is run as a public service. This is really a servant leader model of PACE; it is supported by user fees, so no tax dollars are required. It's been very respectful of not requiring a lot of work from local government staff. And then, it is made available in a very flexible free market manner, and any lender can participate, and all of the power, really, is in the hands of the property owner, to determine how they wanna do a project, what project they wanna do. It enables them to do business with the people they wanna do business, in the way they're used to doing business. So, it's particularly flexible in Texas.

And, Una, if you would skip over the next couple slides. For those of you who are interested in creating a program, they will be helpful to you in meeting the needs of conservative local governments and a free market private sector. But I'd like to focus, now, on how it works.

So, in Texas, the building owner finds their own contractor, determines the projects they wanna do, identifies the lender they wanna use, and they apply to the program. And then the government administrator does the rest of it. But all of that, I wanted to just highlight how much is done in the private sector. So, the owner signs a contract with the local government that says, "Please make my property responsible to you, the local government, for the cost of these improvements. I promise to pay them, and I understand if I don't pay them, that I will be facing the same process as if I didn't pay my taxes. The lender signs a contract with the local government, giving the lender the right to the stream of payments, and in our state, the lender actually collects the funds. They don't go on the tax bill, but the lender

collects those funds for the local government, and then the lender has the access to the local government for collection, if these are not paid. So the lender provides the funding, the contract is completed, and then the assessment process begins.

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So, we have three examples, here, but I'm running out of time and I really wanna get to resilience, so, Una, if you would move to the slide called "PACE resilience tool."

And these are great examples of the financial benefits of PACE, for nonprofit, multi _____ using PACE as the purchase of the building, using PACE to renovate a building you already own. They're great examples, and you'll hear more about them today, as well, but I wanna focus on PACE's resiliency tool, so, creating power onsite with distributed generation. There are all kinds of tools available to you today and through this webinar, about cogen and CHP, but it's basically allowing the heat in a process to create its own power onsite. So, this provides control, so if you have an unforeseen, an unexpected separation from the grid and your power goes out, the ability to create power onsite enables multiple opportunities. And this is why a lot of hospitals and universities use it, but it is an enormous tool for our industrial sector, as well. And there's a lot of freedom, here, so, there are a lot of market options. So, a small chemical plant might need enough capacity, through a CHP or another form of distributed generation, to control the shutdown so they don't have unexpected methane emissions, or to control the shutdown so that things don't overheat. And this enables them to avoid damage to the remaining _____ their ability to maintain production.

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So, in addition to lowering the general operating costs, being able to control the loss of power, and not have it just be so abrupt if you're cut off from the grid. There are a lot of things that are avoided, if you can control that situation. So, you can avoid property damage and the cost of cleanup, disruption in production, and the loss of business. There are enormous safety risks, to employees and to the surrounding community, when power is lost unexpectedly in the middle of many types of production – employees don't have to have loss of work, you're not gonna face the loss of community goodwill, or regulatory permitting violations – all of this can be avoided. And then you can avoid the general liability for damage to others, as well. So, this is all about

managing risk, and with PACE, companies can manage risk, as I said, in a way where they can provide the minimal power necessary to shut down safely, or they can purchase enough CHP to just keep the process going right on after the loss of the grid. Those are market decisions, but PACE enables companies to actually consider these options, for the first time, without huge hemorrhaging from their own capital cost of running the business.

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So, resiliency is needed for more than hurricanes and flooding. We're all focused on Harvey, but, frankly, much of Texas is already back in a drought. So there's, how can you use PACE and distributed generation, or just water efficiency, to become more resilient through drought. Other parts of the country, and, frankly, some of northwest Texas, deal with ice and snow. Fires have been a huge issue in California, and even here in Texas. So, what can we do with water use, efficient water use, that could help with that? Wind – again, making our buildings more resilient, we have to address wind. And then just general brownouts – really, we're talking about any disconnection, not only from the electric grid, but also from our source of water.

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So, Property Assessed Clean Energy is really a win-win-win, and the only downside to it is when people don't use it, when organizations don't use it. Everybody benefits from this opportunity – it's a challenge to get your arms around the concept, it takes multiple – it's kind of like an onion: you just have to keep at it and peel through the layers, but it's all good. And if you're interested in the way that Texas did it, collaboratively, to address the concerns of all stakeholders, be happy to visit with you about that, any time.

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And here's how you can reach me.

Una, thank you for the opportunity to share the Texas PACE story, today.

Una Song:

Great, thank you so much, Charlene. Texas is doing a lot to get PACE off the ground, especially with resilience.

So, a quick reminder to those on the webinar: please send in your

questions, any you may have, through the webinar chat box on your screen. We are collecting those for a Q&A at the end of the session.

We'll now pass it over to Rachel, who will give us some real-life examples of organizations using PACE to increase the resilience of their buildings.

Rachel Davis:

Thanks, Una – appreciate the chance to be here with everyone, today.

And thank you, Charlene, for your introduction to commercial PACE – I think that was really helpful kind of an intro for everyone. And then, I will go into a little bit more detail, now that you've heard what cities and corporations are doing to plan for resiliency, and how PACE is becoming part of the conversation. I thought I expand a little bit more on the usage, as well as the benefits of PACE, why people would choose to use that over maybe another method of financing. As well as a couple of case studies that we've been a part of, as well as others throughout the industry.

So, next slide, please? And we'll go onto the next one, as well. Thanks, Una.

All right, so just really quickly, a little bit about Petros PACE Finances, as we are an Austin, Texas, based specialty lender focused exclusively on commercial PACE lending. So, we are a direct lender with strategic capital partners, and we fund projects anywhere from half-a-million dollars up to \$50 million-plus. We have expertise in lending, _____ management, structured finance, and then, long-term relationships with institutional investors. So, we're also involved in early-stage program development across the country. We were helpful with getting the program started in Texas, and then we've also worked with programs across the country. We've funded over \$50 million in projects, across 6 states, plus, Washington, D.C. So, we're excited to see that resiliency become an increasingly important topic, with PACE in the conversation, to help make that possible for everyone.

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So, as Charlene mentioned, _____ PACE is essentially for projects that decrease energy, or water consumption, or generate onsite. Whether they're for resiliency or not, many times, we hear PACE talked about in the realm of energy and water efficiency, but

resiliency is a huge part of that, and a lot of people would say there's kind of an overlap as to what's considered efficiency, sustainability, and resiliency, so, a lot of it just really goes hand-in-hand. So, this slide is really just to point out all of the different measures that are going on across all companies, facilities – no matter what type of business that you're in, you're gonna have some sort of HVAC, lighting, water needs. And a majority of these commercial PACE projects that we have funded typically cross over multiple measures, here; very few of ours have actually been single-measure projects that we've funded.

So, _____ if you don't mind flipping to the next slide, Una?

These are some of the _____ that are more associated with resiliency, whenever you think about that. So, solar, wind, and cogeneration, these are all measures that qualify for PACE. A lot of times you see solar, whether it's solar thermal, ground mount, roof mount, as long as it's behind _____ solar generation, that typically qualifies for PACE. And if you pair it with battery storage, that's even more ideal if you're trying to get to a resilient facility. And then, we've already talked a little bit – Charlene did a great job talking about cogeneration and the benefit there, and that's another great way to reinforce the resiliency of a structure, and decrease your risk associated with any natural event that could go on.

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And then, here are some others that are a little bit more state-specific _____ seismic retrofits. They're currently only available in California and Oregon, but these were measures that were specifically built into the statute when it was enacted within the state, to allow PACE to fund these types of measures. And so, seismic is obviously a really important one that we see quite a bit of interest in, and then, windstorm is only available in Florida, at this point. And so, those, we haven't worked with any windstorm projects just yet, but I anticipate that that's just a matter of time before we'll start to see more of those kind of paradigms. And then, some other measures that you would typically think about – battery storage, backup generators – whether you have it onsite, to prevent any outages, prevent any blips, or just if you're going to utilize _____ programs, or capitalize upon different pricing mechanisms throughout the day, if it's more efficient to run your backup generator. And then, geothermal energy systems biomass, anaerobic digestors, all of these _____ qualify by state. So, if you ever have any questions, you can always reach out to the lenders or

to the different PACE authorities within the state, then they can let you know what qualifies and what doesn't. And then, obviously not on here, but anything that's irrigation, water reuse, more efficient systems, all of that just overall helps create a more resilient environment for your business.

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Okay, so, you guys know, better than anyone else, that there are a lot of options available when it comes to financing your resiliency project. And so, equity, whether it's short-term equipment loans, leases, power of purchase agreements, _____ PACE has some unique features that can make it a great fit for energy efficiency, and especially resiliency projects. And so, I'll go through this fairly quickly, but you guys can read through it a little more as you like. But as Charlene mentioned, it's 100 percent financing, so there's no out-of-pocket for the hard or the soft cost associated with the project. So, that really frees up your operating and capital budget, to fit toward your core business. It's _____ and it can never accelerate, and the terms are set up up to 30 years, to match the average useful life of the measures that you're going to be installing. And again, PACE stays with the property; it's not tied to the ownership but to the property, and it transfers upon change in ownership. And then, one of the big features, that also Charlene hit on as well, _____ most states require that the savings outweigh the total cost of the investment. So that means that, from day one, you're typically generating cashflow, increasing that operating income, and increasing the asset value. And then, one of the last features is that, because it's treated as a property tax assessment, whenever you have – in most triple net leases, there's the provision that would allow you to pass on the cost of the measures to those tenants within the building who are also going to reap the benefits of the reduced utility savings, as well.

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And so, bottom line, commercial PACE can enable you guys to do sustainable improvements that provide additional comfort and resiliency to your tenants, and it's going to provide a more inexpensive capital to reduce the size of equity or the reserve requirement, and enhance your project level return.

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Okay, where is commercial PACE available today? It's growing everyday, but this is the latest snapshot as of a couple of weeks

ago. So, there are roughly 20 states with programs in place, with project either funded or they're underwriting toward their first project. And there are numerous others behind that, that are in some stage of enabling legislation or developing the program, so that they can start funding projects.

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And then, just to give you a quick snapshot, sometimes it's better to see what's going on in the broader commercial PACE market, but most of the projects to date have been in the energy efficiency and renewable energy sectors. And we've seen _____ 146 percent increase in the size of commercial PACE transactions, just in the last two years. So, the growth is pretty substantial, and so, we're just over \$520 million in funded projects to date. And at the bottom of this slide, you can see that commercial office tends to be the highest user of commercial PACE, with mixed use retail industrial. And then these other sectors are certainly growing as well, 'cause there's a need for those as well.

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Okay, and so, really quick, here's a case study. We helped fund this project last year, and it was the largest commercial case transaction to date. And so, it was for the Seton Medical Center in California, and we cofounded \$20 million of the \$40 million project. And so, they needed to do the seismic retrofit, to meet the mandatory Hospital Facilities Seismic Safety Act requirement in California. And so, in addition to all of their seismic retrofit, we were also able to help them upgrade their systems and communications, fire alarm, emergency power and lighting, and fire sprinklers. So, this was a way to allow them to continue focusing on their patient care and services for the community, and alleviate some of the burden of having to pay for this out of pocket.

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And then, just really quickly, there are a ton of examples, and I just grabbed a few. But there have definitely been programs for multifamily users that have taken advantage of commercial PACE to fund their seismic improvement. And there was, just recently, a pharmaceutical company in California that funded their cogen and backup generator using commercial PACE, as well. And that was a sizable project of just over \$8 million, and of course they had other efficiency measures included in that loan, as well. And then, we're talking to a client in Texas, right now, for one of their projects, and

they wanna have a natural gas generator onsite for backup and demand response programs, along with their other energy efficiency measures.

So, we're definitely seeing an uptick in folks interested in this _____ the _____ unfortunately, we've had a lot of events that have come up, lately, that just bring this back to the forefront of everyone's minds. So, if there is ever any questions, you know, happy to take your questions today, and you have my contact information in the slide as well, if there's anything else that comes up after the event. But thanks for having me on this call, guys.

Una Song:

Thanks so much, Rachel.

So, that ends the presentation part of our webinar, and so now I'd like to move to question-and-answer. So, we have a lot of questions, and I'll start reading them off and asking our presenters to weigh in. But if you have questions, please put them in the chat box. If we don't get to them all, we'll try to take a chance to answer them offline.

Well, so, to start, this is kind of a broad question that I'd invite all of our panelists to weigh in on:

Is energy efficiency included in resiliency considerations, or is it a separate category?

Jeremy, can you start, and then maybe Charlene and Rachel can talk about it in the context of getting PACE funding.

Jeremy Sigmon:

Sure. Thank you, Una, and I'm sure that there will be a couple of other answers to add.

So, certainly energy efficiency is a core component of the way that the US Green Building Council thinks about resilience, and certainly many of our partners and peers that have joined us _____ the building industry statement on resilience that was assigned in 2014, and commits a bunch of building industry organizations to action on resilience. So, I can probably describe it in a couple of ways. Certainly, energy efficiency is part of any building's mitigation strategy, or even a city's mitigation strategy, which is decreasing demand for energy, and, therefore, its associated impacts. So, talking about reducing GHG emissions, that could help us to avert catastrophic climate change, so there's one mitigation angle for certain. There's also an adaptation angle. For buildings that are electrically efficient, those buildings can

operate on much smaller amounts of electricity, that could be provided by backup power supplies or small power systems like microgrids or even battery backup systems and things like that. So that's electrical efficiency.

But thermally-efficient buildings, too, matter, because thermally-efficient buildings can help ward off the elements, and allow people to be more comfortable, and allow the spaces, actually, to be survivable, in the event of very extreme temperatures. And I should also add that it's not just energy efficiency in those couple of ways, but it's also the energy that's associated with other building systems. Like, water, there's a lot of energy associated in the water that we consume, so saving water saves energy. There's a lot of energy in the transportation infrastructure that we have, and so, smart location and linkages and transportation infrastructure help to reduce energy, and, therefore, its associated impacts. The same is true for waste and materials.

Una Song: Great – thanks, Jeremy. Rachel or Charlene, you wanna weigh in?

Charlene Heydinger: I think Jeremy covered it.

Rachel Davis: Yeah, [audio cuts out] from the PACE side of it, really, what we're gonna be looking for is what meets the program requirement. And in most states, it's just _____ that it has to have an energy or a water reduction component, or generate onsite. And then the specific _____ California, Oregon, and Florida, for wind as well as seismic, those are the ones that we're starting to see. But I could anticipate that, as we move along and different programs evolve or come into shape, that the other resiliency measures could be more prominent in those statutes.

Una Song: Great – thank you.

Charlene, this is for you:

As we become more resilient, will utility companies penalize businesses and federal government consider loss of profits?

Charlene Heydinger: I hope not, because even our utility providers, where they are in the private sector, can use the Texas PACE Financing program to become even more efficient and more cost-effective, by lowering their water and energy costs. Frankly, the growth in Texas is so significant that our PUC requires of our energy providers that they participate in programs to help their customers reduce their energy use and become more efficient. So, we have so much growth that

we haven't faced a problem of lost resources. But, frankly, the cost of rebuilding after these challenges affect everyone, including the utilities. So, in Texas, we haven't seen that concern, and we really don't expect to see it. The leadership at the state, the finances of the generators themselves, and the need to constantly provide more power and water for customers, is what is driving a lot of the energy efficiency and onsite generation push in Texas today, even before we get to Harvey, and the storms, and floods, and fires, and et cetera.

Una Song: Great – thanks, Charlene.

The next question we have is for Rachel:

Can you discuss commercial property market classes, and how PACE works or doesn't work for them? My understanding is that Class A offices tend not to go for PACE. What is the appeal to lower class commercial properties?

Rachel Davis: Thanks, Una. That's a good question, and I wouldn't necessarily say it's as much a difference between Class A or Class B or Class C buildings, if they would typically be qualified. _____ more in terms of what is the strategy of the owner, if they tend to want to use outside capital to fund their projects, or if they _____ whatever cost of equity they may have, if they would prefer to deploy that back into it, or if they already have some sort of a reserve set up within their mortgage to fund their projects. So, really, I would just say, for properties that might be a little bit tighter on cash, or that don't have _____ the way that their leases are structured, if they're somewhat handcuffed in terms of what they can do within the building and they get reimbursed through their tenants, that would be more of a determining factor. So, that's why you see a lot of folks in a triple net building would be interested in this, because the building tenants are actually the ones that pay the bills. And so, anything that they do on the efficiency side, obviously, the tenants get the benefit of that, but they would also wanna make sure that they're bearing the costs to and through the property, as well.

Charlene Heydinger: [*Crosstalk*] may I add just a little bit [*crosstalk*]?

Una Song: Oh, absolutely.

Charlene Heydinger: One of the challenges in PACE and getting property owners to understand the opportunity is unpacking what everybody knows. So, whether it's the CFO, or the investors, or the property owner,

when they look at deferred maintenance or they look at investing in a building they already own, they automatically try and figure out what is it in the business that they're not gonna do in order to pay for this. You know, "Who are we gonna lay off? What line are we not going to install? What new building are we not gonna purchase and open?" So, part of the challenge of PACE is helping property owners realize that those negatives are gone. PACE eliminates every one of those negatives, because they're gonna use someone else's funds. It's 100 percent financing, so it's no longer this Solomon's Choice of splitting the baby; they can have both. And so, one of our great opportunities, here, is to reach out and show this new paradigm to the folks who are the financial folks in these properties, large and small.

Una Song: Great – thanks, Charlene and Rachel.

We'll go back to Jeremy, but again, Rachel or Charlene, if you have thoughts, please chime in:

Can you highlight two or three very specific building design elements that make a building more resilient?

Jeremy Sigmon: Sure. One goes back to what I was mentioning earlier – and it's a good question, by the way – which relates to radical energy efficiency, or resource efficiency, allowing the building to operate on far less energy than would be needed. So, energy efficiency is absolutely one of them, but so is radical resource efficiency, so, beyond energy, it's also water and other supporting systems. Another one that comes up all the time – and it certainly matters on what you're trying to be resilient to, but – where are your critical building systems, such as water mains and shutoff valves, and electrical panels and service lines, and how are they out of harm's way. Potentially out of harm's way is in the basement, if you're trying to protect from a tornado of some kind or a twister, but maybe they're actually up on higher floors if you're trying to protect against floods. So, are they out of harm's way? Another thing you can do is to add a safe room, depending, once again, on the kinds of events that you're to be resilient to. And then, thirdly, and I think pretty critical here is, what processes and management are set into place, to make sure that the building management's individuals and building occupants know what to do, and how to do it, and have the tools that they need to be resilient in the face of the event that you may expect in your particular climate zone or in your local context.

Una Song: Great, thanks. Charlene and Rachel, any additional thoughts?

Charlene Heydinger: I think Jeremy got it.

Una Song: Okay, terrific.

Rachel Davis: *[Audio cuts out]* great.

Una Song: Okay, so, Rachel, I'll jump back down to you:

In the case of resiliency measures such as battery storage or seismic upgrades, how are they accounted for in terms of benefits and dollar savings in payback calculations for PACE financing to work?

Rachel Davis: So, depending on which market that you're in, different states may require an SRI to be greater than one, the SRI savings to investment ratio. And so, obviously, in California, for a seismic project, the SRI is not going to be greater than one, and so they would waive that requirement if it's in a state that has that. And California actually doesn't have an SRI requirement; it's more of a, "We recommend it, but realize that there are examples where that's not gonna happen." And so, in other states such as Texas where there is an SRI requirement, if you were going to _____ something such as battery storage, it's typically weighted in with other measures that are going to outweigh the additional cost of the battery storage. And then, there are also cases where, you know, if you have a *[audio cuts out]* combination of measures and your savings are still less than one, then what we would do is just look to see if there is a potential waiver that's required to get the project approved. So, it's mainly just to make sure that the owner acknowledges that the project might not pay for itself, and that they're okay doing that, and that they're in a financial position that they could bear that additional cost.

Una Song: And kind of a follow-on question to that:

So, can PACE be used to offset efficiency costs in new construction, or just for retrofit?

Rachel Davis: Yeah, that's a great question *[audio cuts out]* and again, _____
_____, but it really depends on the market. Texas is a state that currently only allows for retrofit of existing buildings, but there are a handful of other states – and, actually, that list is growing – of folks that will allow it for new construction projects. So, Colorado is one, for example, that allows new construction.

Charlene Heydinger: It really goes to the statute that define the programs. So, in Texas, we have language that says you cannot use PACE for undeveloped lots or lots being developed. And so, after a lot of work with some great attorneys who have been helping us pro bono for five years now, we determined that that would prohibit using PACE on a building that's being built on a green field, like, from the ground up. But PACE can be used, in Texas, for additions, for additional facilities on lots that already have a building or are already developed, and you can tear down something on a developed lot and put something new on it, since that lot is clearly developed. But that's Texas, and every state is different, so, I would encourage everybody to just have a good understanding of what the law for that state is, and that'll help you determine what the local governments are able to do. PACE is a challenge, in that – it's also a benefit, but – it is a local adoption model. So, the states, by and large, enable local governments to participate in a program or establish their own program. And so, we've spent a lot of time in Texas, trying to make that easy for local governments, and to make it uniform. And so, our model program is called "PACE in a Box," and it's literally a plug-and-play program, but it enables the local governments to do this without a lot of effort and impact or risk. And that is after a long investment really paying off, and we're – anyway, it depends on what the local government is able to do, as defined by the statute.

Jeremy Sigmon: Just one other thing to add is, in some states – or, actually, in one state, I will say for sure, in Connecticut – there is even an option for building projects to take advantage of PACE financing, to pay for the green building certification fees such as LEED, recognizing the value of having a third party look over your shoulder, check your math, and make sure that the efficiencies that you're intending to deliver are delivered as promised. So it's another nuance of ways that PACE can be applied to get more out of your building project than just maybe energy efficiency alone, to help boost resilience.

Una Song: Great – thanks, everyone.

So we have time for one more question, and, Jeremy, that's for you:

What other ways are cities addressing water, urban flooding, and rainwater management?

Jeremy Sigmon: Sure, yeah, thank you, I'm glad you asked it, because I just didn't have enough time to provide other examples. But my home city, the District of Columbia, is actually a really interesting example, if

folks don't know it: they're progressively taking on rainwater management, with a first-in-the-nation storm water credit trading program, which I would encourage folks to look up. So basically how it works is, for those who are able to install green infrastructure on their property, to reduce runoff, the D.C. government program enables those property owners to then sell the value of their runoff reductions on an open market, to those that either have regulatory requirements for managing storm water, or want to basically gain access to the benefits that those projects have achieved from water management. And so, there's the ability for basically offsite investment for water management solutions. So they're doing that, and they have a pretty fascinating clean rivers program, which is integrating green infrastructure, and some grey infrastructure for tunneling, to create sort of overflows to catch wastewater before it hits the river, and clean it up when the system gets back to normal working capacity. So, some great examples in the District of Columbia I would encourage folks to look at.

Una Song:

Great – thanks so much, Jeremy.

And next slide.

So, talking about resources, we have a slide that combines a number of resources that are available to help with resilience. I'm not going to read through them all – everyone will have access to the slide presentation. Once we're done, we'll be posting it on the Better Buildings website.

Next slide.

So, just, before you go, I just wanted to let you know about the next Better Buildings webinar, which will be Tuesday, March 3rd, from 3:00 to 4:00 PM Eastern Time. It's titled "Cutting Water Waste – DOE and EPA Resources to Advance Water Efficiency." A growing number of organizations are taking action to reduce their water consumption, to protect against rising cost, mitigate the risk of future water scarcity, and demonstrate environmental leadership. Cutting water waste has the added benefit, as Jeremy just noted, of reducing the energy needed to treat and distribute water. Learn about tools and resources from the Energy Department and the US Environmental Protection Agency, that can help you meter and track water consumption, identify savings opportunities, and implement best practices to accelerate your water saving strategies.

And if you go to the next slide –

And so, this is the contact information of all of today's presenters. We also have Holly Carr, who is the Better Buildings Challenge DOE program lead for buildings. And then, we also have program support, Kendall Sanderson and Britney Wyan, who helped us greatly with today's webinar.

So, thank you, again, to all of our panelists for taking the time to present the great information you had about resilience strategies and how you can use PACE for them. Please feel free to contact your presenters directly with additional questions that we didn't get to answer during the Q&A period. And if you wanna learn more about the Better Buildings Challenge or Alliance, please feel free to contact either Holly or me. And I encourage you to follow the Better Buildings Initiative on Twitter, for all the latest information. Everyone will receive an e-mail notice when the archive of this session is available online, that will include both a PDF of the slides and the recording.

So, with that, we're gonna close today's webinar, and thank you, everyone, for joining.

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