

Operator: The broadcast is now starting. All attendees are in listen only mode.

Adam Guzzo: Good afternoon, or good morning to our folks joining us from out West. It's my pleasure to welcome you to the 2020 Better Buildings Webinar Series. Thank you, all, for being with us today for our webinar titled, "Next Generation Building Performance Policies: Maximizing Energy Savings and Environmental Impacts." We have a wonderful webinar prepared and some really fantastic speakers. Next slide, please.

My name is Adam Guzzo, I'm a Senior Advisor at the Department of Energy, and I have the pleasure of leading our engagement with local governments involved in Better Buildings. Next slide.

So, before I go over a few housekeeping items, I want to highlight just briefly the Department of Energy's Better Buildings Initiative, for those that may not be familiar with it. Through Better Buildings, DoE works to accelerate investment in energy efficiency technologies and practices—in particular, DoE works with partners, stakeholders, and other market leaders to address the key barriers to greater energy efficiency. DoE also works with a subset of partners driving additional savings from other linked opportunities such as waste and water. By focusing on effective financing, innovative solutions, leadership, workforce development, and better information, Better Buildings is helping drive significant and lasting change.

I'm just gonna pause for a second. We're getting a little bit of an echo, so if anyone has unmuted their phones, if you would please mute them.

Returning to the slide, here—as you can see on this slide, we have a number of different ways that we do that in each of these four areas across the Better Buildings Initiative. More than 950 partners have saved nearly 1.8 quadrillion BTUs of energy across 12.5 billion square feet in 3,200 industrial facilities, amounting to nearly \$11,000,000,000.00 in cost savings. And since 2011, approximately 80 public sector Better Buildings Challenge partners, so that's states, local governments, and K through 12 school districts have cumulatively achieved 83 trillion BTUs in energy savings, and \$790,000,000.00 in cost savings. So, really incredible partnership and we're proud of all of the accomplishments of our partners to date. Next slide.

So, today, we're gonna be using an interactive platform called Slido for Q&A and polling. For those of you who may have joined us for our Better Buildings Summit last month, you may be familiar with this platform. So, if you haven't done so already, please go to Slido.com, either using your mobile device or through your preferred Internet browser, and then you'll see an opportunity to enter an event code and today's event code is DOE—that's DOE.

So, if you'd like to ask our panelists any questions, please submit them any time throughout the presentation using Slido. We will be answering your questions at various points during today's webinar.

One of the neat features of Slido that you'll see is that you can not only submit questions and see what others are asking, but you can also vote on questions that other folks have submitted that you want to see the speakers address, and those questions—the most votes rise to the top. And I'll give you a few moments to open up Slido and then we're gonna launch our first polling question. So, in addition to actual questions you can pose to the audience—that you can pose to the speakers, rather—we're gonna use it to do some interactive polling as well.

So, the final housekeeping item today is, if you're having any audio or visual issues at any point, please use the chat box through GoToWebinar, and we'll try to work to address those for you.

So, with that, let's launch our first poll through Slido, and you should see on your Internet browser or on your phone as well as on your screen here in a minute, the question, "Where are you joining us from today?" So, for example, I'm joining you from Falls Church, Virginia. Great, a lot of folks in the Washington, D.C. area. We've got Madison, Wisconsin well represented, some other folks on the East Coast—let's see, New Jersey and Boston, Maryland. Seattle, Washington comin' in strong—Nicole Ballinger, who's one of our speakers today, will be pleased by that. Great. I'm seeing folks from the Midwest and all the way out West in Portland, down South in Raleigh. We've got folks all the way out in the West Coast in L.A. Fantastic.

Well, as you enter the rest of your responses here, we'll let that populate, but it's really great to have such a geographically diverse audience represented here this afternoon. So, thanks for telling us where you're calling from—appreciate it.

Let's move on to the next part of our agenda, which is another poll that we're gonna ask to get a better sense of who's in the room today. So, we wanna know who's in our virtual room, so you should see an option here up on your screen—yep, what sector best describes your organization? So, this time, you have a multiple choice option to select, there's a number of different options. Make sure you scroll down to the bottom to find the correct category for your organization.

And while you're filling out that poll, I'm gonna introduce the topic for our webinar today, and then we'll come back and look at the results today and get a sense of who's in the room. So, we can go back to the slides, please.

So, as many of you already know, there is tremendous opportunity across the United States for energy and cost savings by improving the energy performance of our nation's buildings. The U.S. spends \$400,000,000,000.00 per year to power our homes and commercial buildings. And that represents approximately 40 percent of our country's total energy bill, and much of that energy is wasted—about 30 percent, on average. Given that 50 percent of the nation's 5.6 million commercial buildings were built before 1980, prior to the existence of today's more efficient products and building practices, unlocking the energy savings of these buildings through efficiency improvements represents a significant economic opportunity. Improving the energy efficiency of buildings alleviates pressure on our electric grid and extends our energy resources as we diversified to greater use of an all of the above energy supply strategy. And this helps to ensure a reliable energy system well into the future.

In terms of cost savings alone, we could reduce our country's annual energy bill by \$120,000,000,000.00 if we cut the energy use of our homes and commercial buildings by 30 percent. Next slide.

So, part of what we do through Better Buildings is to convene our partners in webinars like today and in our annual summit that we held last month to talk about the ways that they are working to achieve their Better Buildings goals and the broader energy goals that they have set. So, during today's webinar, you will hear from three jurisdictions that will talk about one mechanism among many that they are utilizing to help reduce energy use and the associated environmental impacts of buildings and their jurisdictions.

Before turning it over to our panel to talk about the specific actions taken by the three jurisdictions that they represent, I want to

provide you just with a picture of the broader landscape of state and local building policies. As you can see on this map, more than 35 state and local governments across the country have passed benchmarking and transparency policies, and another 20 state and local governments require buildings to meet a specific performance standard or to take an energy saving action. This map represents a diversity of building policies, and is just one of many ways state and local governments across the country are working to capture the energy and cost savings opportunity represented by increasing the energy efficiency of the buildings and their jurisdictions.

Before I introduce our panelists, turn back to our poll and see who we have in the room with us today—in our virtual room. Okay, so we've got a lot of other surprising, I thought we had a lot of categories here. We've got quite a few from the nonprofit sector. I'm seeing a fair number of states as well, some energy services providers, and then a percentage of cities and counties. So, if you haven't had a chance to fill that poll out and tell us where you're from, please do so, and then we will close that one and move on. So, thanks, everyone. We'll go back to the slides now, please, and we will introduce—or I will introduce our really fantastic panel that we've got lined up today.

So, our panelists—oh, before I do that, I'm sorry, let's go back to that poll. I got a little ahead of myself. So, we've got another poll coming at you and we'll let you fill this one out while we—while I introduce the panel. So, is your city or county currently considering passing a policy targeting energy use in new or existing commercial buildings? So, again, you've got some multiple choice options here and we'll let you fill that out, and then now, I will introduce our fantastic panel—apologies.

So, our panelists will introduce themselves more robustly, but I'm just gonna give you a brief introduction of who you're gonna hear from.

So, first, you're gonna hear from Nicole Ballinger. She is the Buildings and Energy Advisor in the Office of Sustainability and Environment in the City of Seattle, Washington. She advises on nonresidential building policy development and building owner support programs and was previously the program manager for Seattle's Tune Up Accelerator program, which she's gonna tell you more about here in just a minute.

Next, we'll hear from Dave Epley, Associate Director of the Data and Benchmarking Division at the District of Columbia

Department of Energy and Environment. And the Data and Benchmarking Division is responsible for the District's energy programs, including the development and implementation of the District's Building Energy Performance Standards and energy benchmarking program.

And then finally, it's my pleasure to welcome Rajiv Ravulapati to the panel. He's a Government Services Analyst in the Building Division in the City of St. Louis, Missouri. He's responsible for overseeing the implementation of the city's benchmarking ordinance and the forthcoming Building Energy Performance Standards that was passed in April.

So, before we turn it over to Nicole, let's look back at our results quickly and get a sense of what's happening in your jurisdictions.

Great. Okay. So, a lot of folks on the call, either who represent a city or county or state are looking at those specific energy standards or maybe they reside in the jurisdiction that's looking at that. I see folks looking at benchmarking and transparency policies as well, and then quite a few are not considering policies at this time.

Great. Well, I see still a few folks are selecting answers. So, we'll give you about five seconds here to wrap that up and then we'll turn it over to Nicole. So, Nicole, I see you on video—if you wanna take it away, we'll turn back to the slides.

Nicole Ballinger:

Sounds great, Adam. Thank you. Okay. Well, good morning, everyone. Thanks for that introduction, Adam. I appreciate the opportunity to speak about Seattle Building Tune-Ups and the Tune-Up Accelerator today. So, you can go right on to the next slide.

Okay, so, Building Tune-Ups is a part of Seattle's Climate Action Plan, and buildings make up a third of Seattle's core greenhouse gas emissions. Our goal is net zero emissions by 2050, with an interim target by 2030 to reduce our emissions by 39 percent.

So, the current requirements we have for existing commercial buildings to meet these goals are energy benchmarking and the Seattle Building Tune-Ups program, which is the topic of today's presentation. Next slide.

The Seattle Building Tune-Ups requirement is an operational and maintenance based program that is like a light retro-

commissioning. It draws its inspiration from the PNNL building retuning program. The Tune-Up requires an assessment of 39 total elements, 20 of which are required to implement if found efficient, and 19 that are voluntary to implement. It covers operating protocols in HVAC, lighting, water usage, and water heating, and also includes a few additional minor envelope elements for maintenance and repair. Next slide, please.

The Tune-Up process is as follows. Building owners first find a qualified Tune-Up specialist. The specialist conducts a building assessment to assess the systems to identify operational or maintenance issues. They also review energy benchmarking data and water bills, so that helps to verify our energy benchmarking data and make sure it's accurate. They identify corrective actions, then the owner, staff, or service providers implement the required corrective actions, and lastly, the Tune-Up specialist verifies the report that the actions have been implemented and are working correctly and sends that report on to our city. Next slide.

So, the Tune-Up requirement is being rolled out by building size. You can see the dates, here, I'm not gonna go through them all. But the largest buildings are required first. And so, our first group of buildings complied last year, and we have really strong compliance there.

However, I do want to just quickly point out the deadlines for the smaller buildings have been expanded a bit due to COVID-19 and there's also some extensions in place for health care type facilities. So, if you're in Seattle and you might need to comply, definitely check our website or contact us for updates. Next slide, please.

So, now, getting on to what was the Building Tune-Up Accelerator? So, during the public involvement sessions for developing the Tune-Up mandate, we heard that there was generally interest in and knowledge of retro-commissioning in larger buildings, but we didn't hear that so much in the smaller buildings.

So, the Tune-Up Accelerator was a time limited program to accelerate the market in the mid-sized buildings. And I want to acknowledge that we're extremely grateful for the support from U.S. Department of Energy. We could not have done it without your support. The program offered financial incentives and technical support to meet the requirement early. We kicked it off in early 2017 and we actually just wrap it up a couple months ago.

Our goal was 20 percent average energy savings across at least 100 buildings or spaces and about 99,000,000 KBTUs per year. Next slide.

So, this is just a reminder of our target group of buildings all circled there in pink, and there are about 400 to 450 buildings total in this size range that we need to do a tune-up. Next slide.

And I can't go into detail due to time, but I really want to acknowledge our many program partners on this slide. It was very much a team effort. So, if you're looking about the slide, you can kind of go through and see what everybody did. Next slide.

I also want to point out that getting the service provider market ready for tune-ups was really important, to meet both the accelerator needs and the concurrent rollout of tune-ups to larger buildings to report in 2019. Next slide.

So, the Tune-Up Accelerator offered enhanced technical support and also a financial incentive at kind of three different levels of engagement. So, the first level was a basic tune-up, which are incentives to meet the mandate at \$0.12 per square foot, and thank you to City Light for offering that as a huge part of our local match. And we also had Tune-Up Plus, which was to meet the mandate and it added some additional measures that might qualify for existing City Light incentives. And then lastly, we had a building renewal program, which was technical support and engineering analysis for sort of deeper retrofit plans from the University of Washington Integrated Design Lab.

Lastly, each building also got a DoE asset score for their building. Next slide.

So, moving on to results. So, we had 102 buildings complete the Accelerator. That was a total GSA of about 6.9 million square feet, and the average size was 67,700 feet. So, we really hit our target market pretty squarely. Next slide.

The types of buildings that participated were a good slice and variety of our target market as well, with the largest sectors being office and K through 12 schools. Next slide.

All types of building owners could participate in the program, and for those who did participate, about half were public entities such as city-owned buildings, great participation from Seattle colleges and K through 12 schools, and the rest were privately owned, with

about 43 percent for profit and about 8 percent nonprofit. Next slide.

So, now, on to some findings. So, as I mentioned, there were 20 required tune-up measures, and as you can see, the required measures were all in HVAC. Lots of scheduling and adjustments like that, that can be made. Our final technical report to DoE has all the results for the measures. Next slide.

So, the 19 voluntary measures, I just want to point out that corrected means planned or ready for implementation or complete. So, 59 percent of the participants indicated that at least one voluntary action was being implemented or planned. I think that's a great result. And as you can see, lots of old lighting, old equipment in this mid-sized market. Nearly 50 percent had equipment approaching end of life. So, there's some opportunity for future programs. Next slide.

For additional measures beyond the tune-up, 19 buildings had an incentive complete or under way with City Light. Most were LED projects or a few HVAC. And we had five buildings that participate in the Building Renewal Path for deeper retrofit planning. Next slide.

So, I'm gonna jump to our big buildings and give you a sneak peek at our results there. So, fairly similar to what we found with the small or mid-sized buildings—but there's more focus on sensors likely due to sophisticated controls. Next slide.

We had similar voluntary measures found, but at lower frequencies, and it might indicate that larger buildings are better maintained and have newer equipment. Next slide.

And then back to the smaller buildings. We did conduct an evaluation in 10 buildings with some site visits and pre- and post-energy data analysis. You can go to the next slide. I have a lot of slides. *[Laughter]*

So, we found very strong measure persistence and found that reporting was accurate. If you focus on the pink row, we found that our energy savings was 8.3 percent on average in the buildings we sampled. Next slide.

So, we took the results from the 10 building evaluation and then we combined it with results from the asset scores, review of the tune-up reports to revise our saving estimates for each of the

program paths. And so, our original goal was 20 percent, but what we found was, we didn't quite reach that, we revised that down to 12 percent. It's a bit less than we hoped, but we still think it's a great result for a primarily ONM based program. And next slide.

I also want to point out, we conducted a post participation building owner survey. We found there was really positive program experience, it benefited their building operations, they were satisfied with their tune-up specialist. They said that tune-up drove participation and energy conservation measures beyond the tune-up and lastly, they noted that offering an incentive and technical support was really good policy for the city.

So, I'm just gonna wrap up here with my last slide, if you can go to that one. So, what are next steps beyond tune-ups? So, there's a Washington State Buildings Performance Standard and Rule Making now, and we're looking at how we can help accelerate the impact of this program, especially for greenhouse gas emissions reductions in tandem with our existing Seattle policies. We're also thinking about; do we need a future Seattle Building Performance Standard? And that's recognizing that reductions from tune-ups, benchmarking, and the new state standard as well as our new construction codes are really not enough to meet our climate goals. So, we've gotta give that some consideration.

We also have a Seattle Green New Deal. We know that any of our policies need to promote and create local regional good, clean energy jobs and adjust transition, and we also recognize that building owners need support, such as hubs and financing.

And then just finally, you know, COVID-19 has had a disproportionate impact on our vulnerable communities and people of color. So, looking ahead, we're preparing that Seattle is ready to support programs that really equitably focus our efforts on reducing climate impacts on our most vulnerable populations.

So, thanks for the time to talk today and I look forward to any questions you may have.

Adam Guzzo:

Thanks very much, Nicole. You threw a lot of great information at us, and I just want to remind folks that this webinar is recorded and the slides will be posted, so if you didn't quite catch all of the great information on Nicole's slide, there's an opportunity to look back at that.

So, Nicole's got a couple of questions that have come in here through Slido. Just a reminder to our audience, use Slido if you've got questions for Nicole or for the other speakers. We'll try to address as many of those as we can.

So, just the first one here at the top—"Do multi-family properties participate in the tune-up program?"

Nicole Ballinger: No, our tune-up program only applies to commercial buildings right now.

Adam Guzzo: Great. Okay, and then, second question—"Will the state standards pre-empt the city standards? What if the state standards are less stringent? How does that state/local relationship work in this context?"

Nicole Ballinger: Yeah, we're actually very involved in the rule making process. The state standards will not pre-empt the city standards. They actually put some language in their legislation that made sure that wouldn't happen, so.

Adam Guzzo: Okay. Now, let's see. We've got a few more coming in now, which is great—glad to see people are engaged and interested. We'll take maybe one or two more questions. I'm guessing the energy savings being estimated maybe is a bit of a longer question, or is that one that can address fairly easily, Nicole?

Nicole Ballinger: Yeah, it's a longer answer. We used pre- and post-energy savings from the energy benchmarking data that we have, but there is—we have a lot more information in our final report. I'd be happy to send you a link if you want to shoot me an e-mail or something.

Adam Guzzo: Okay, and her e-mail will be provided at the end of the slide deck today.

Alright, let's do one more, which is just this question about—"Do LED lighting upgrades represent the greatest untapped opportunities?" I know you mentioned HVAC was something that came up a lot. Maybe it's not lighting, maybe it was in another area that's beyond those two.

Nicole Ballinger: Yeah, we do see a lot of somewhat outdated lighting, and I think there is a lot of LED opportunity. However, that's a fairly quick and easy thing for folks to spot in a tune-up. What I'm hearing, you know, more from the technical folks who are doing this and also from our in-house conservation managers is that sometimes there's

really a lot more kind of sophisticated HVAC controls thing that's a little harder, you gotta dig deeper to find them, but will actually potentially generate more savings.

Adam Guzzo: Great, and now, I think, an important clarification about the tune-up program and whether it was voluntary or not.

Nicole Ballinger: Uh, no, it's not voluntary. *[Laughter]* It is a mandate. Our Accelerator program was voluntary, and that's why they were able to get the incentive, because they were meeting the mandates two to three years before they were actually required. But our tune-up requirement is definitely a mandate, yeah.

Adam Guzzo: Great. Thanks, Nicole. Well, we appreciate your time.

Nicole Ballinger: Thank you.

Adam Guzzo: Nicole is here at the end for some more questions, and now, we're gonna turn it over to Dave Epley from the District of Columbia, and Dave, take it away, you've got the floor.

Dave Epley: Hi, everyone. Can you hear me? Okay, great. Well, thank you so much for having me here today, folks at the DoE. I'm excited to be here.

So, my name is Dave Epley, I'm the Associate Director for the Data and Benchmarking Division. We're located in our Energy Administration in D.C., similar to state energy programs or state energy administrations that you'd find in other states.

So, I'm gonna talk a little bit about the Building Energy Performance Standards that we have going on in D.C. right now. Next slide.

To start off, D.C. passed the Sustainable D.C. plan back in 2013 and we updated it two years ago. The plan is this sort of holistic outlook on the city, dealing with everything from energy and water to health and food access and equity, jobs, justice—all those different types of things. Our energy goals, which I'm gonna talk about today, fit into this plan as sort of this plan I kinda see as like the umbrella with these different plans and goals and actions all sort of sliding into that. Next slide.

Here are some of the energy components of some of the goals that we have. So, the two specific plans that relate to conversation today—so, it's our Climate Ready D.C. plan, again, Climate

Adaptation for D.C., and our Clean Energy D.C. plan which is sort of our comprehensive energy plan, and then that's been put into laws in various ways between action items and building codes.

The goals that we have, as noted here in the plan, is to cut energy use 50 percent, renewables up by 50 percent, then we're dealing with existing and new construction buildings—so, net-zero energy new buildings, and retrofits for existing buildings, which is where the Building Energy Performance Standards come in.

Related to all this, too—so, these goals are our 2032 goals. Above that, we have our decarbonization goals for zero carbon, which is a 2050 goal. Next slide.

So, we put together here a little bit of a timeline. So, D.C. has been focused on green buildings, energy efficiency, sustainability, and buildings for quite a while—2006 is when we passed the Green Building Act, which has required a lot of different sort of energy and sustainability requirements for public buildings, but also for private buildings—so, 50,000 square feet or greater. That was the first of its kind at the time and that's sort of how that sort of model of public leadership and private leadership for larger buildings and sort of how we have progressed with our varying laws going forward.

You know, on this timeline, you also see the triggering of our energy benchmarking requirement, the Sustainable D.C. plan as I mentioned, the energy codes as well as our Green Construction Code that we passed are our portfolio of energy standards. So, a lot of different things sort of feeding into this and being channeled and plugging into different parts of the comprehensive energy plan in Sustainable D.C. Next slide.

So, as I mentioned, new buildings and existing buildings are both addressed in the comprehensive energy plan. I'm not gonna talk about the net-zero energy code, but that is something that we're focused on and working on pretty aggressively right now. For existing buildings, we're dealing specifically—you know, one of our main components of this is the Building Energy Performance Standards, and renewable energy had 100 percent projected by 2032, or by law, and 10 percent from local solar, also focused on that, just existing buildings today. Next slide.

So, here are the projections for greenhouse gas emission reductions. And if you can see on the right, you can see the, sort of the pie chart here that looks where we're gonna get these

reductions from. The dark green is the existing buildings piece and that's what we'll focus on with the BEPS, the Building Energy Performance Standards. Next slide.

The Building Energy Performance Standards—I'm gonna call it BEPS from now on. So, BEPS is looking to have about a 21 percent reduction in source energy for our existing buildings, and of that, broken down, based on the phasing in is about 18.7 percent from our 50,000 square feet or larger, which is our first class of buildings that will be going through the BEPS standards. And the next one being the 25 to 50, and then the 10 to 25. Notably here, as you'll see, is that the smaller buildings really carry a lot less weight in terms of actual energy reduction potential over time. And we know this and we've looked into this based on the energy benchmarking that we've had around for quite a while, so we're able to sort of see and map out how that will be affected. Next slide.

So, one of the things that I think was a key to the success for our program and getting it set up—that is, BEPS—is having benchmarking place for quite a while. We've had benchmarking place in D.C. since about 2012, 2013, and over time, we've been able to really see the energy use in buildings, you know, really look at our data, clean it up, get it to be relatively accurate. And really, that all kind of fed into studies and research that we did so that when we were putting the BEPS policies together, we had a really clear indication of how different buildings were using it and what the savings potentials were, what was out there and so forth. Next slide.

So, most recently—so, the D.C. Council put forward the Clean Energy D.C. Omnibus Amendment. And so, this took what was in the D.C. plan and it put it into law, and put it in a lot of different things, but the best standards was part of that, as well as it dropped our benchmarking requirements and phased them in over time, dropping them from where it was, which is 50,000 square feet or greater, down to 25 and then down to 10 over a series of years. And then, to put the Building Energy Performance Standard in place. Next slide.

So, BEPS. So, BEPs, what it does is, it establishes, it looks at all the buildings, a group of buildings, that first group of buildings being 50,000 square feet or greater, and establishes a—looking at a threshold for energy performance. And the law states it has to be no lower than the local median Energy Star score. So, we're using Energy Star portfolio management to accomplish this and all the

work on that benchmarking program. It basically says if you're below that median, then—or below the standards set by the district, then you have to bring your building up following a variety of different compliance pathways, and you have a five-year period to do that, which we sort of have referred to as a compliance cycle.

So, in terms of timeline and phasing in for us, we are required to set the standards by January 1st, 2021, so this coming January, and at that point in time, there will be a five-year period that the buildings that are below the standard have to come above that. As I mentioned, there's three different compliance pathways—there's a prescriptive, a performance pathway, and there's a couple other sort of alternative compliance pathways. So, one of those is what we are referring to as a standard target pathway, which is kind of focusing on buildings that are specifically pretty close—already pretty good performing, but the class of property types that they're in are all very good and performing.

So, like, we see this a lot in our commercial new construction buildings where, in general, they're all doing very well, so the local median is well above the national median. And so, in those situations we're looking at how we allow for them to maybe have to go less distance. On the performance path, on the prescriptive path, what we're looking at is a 20 percent improvement over those 5 years.

As I mentioned earlier, there's about 2,700 buildings that are gonna be impacted by BEPS. The first cohort, the first group is the 50,000 square feet or greater, and I'll have a timeline in a second. But the next one is about 561 buildings of 25 to 50,000 square feet, and then our last category, which is the 10 to 25. So, quite a few buildings in D.C. impacted.

The other thing that happened here is the Best Task Force was created, which, we'll talk about that here in just a bit more. Next slide.

So, this slide demonstrates the timeline for BEPS and when it comes in. It says January 1st, 2021 is when the standards will be set by, and then there's the five-year cycle. And then after that, there's another year to look into how—to basically collect data from the five-year cycle and then set the standards again. So, one thing with BEPS is, like, you have these cohorts that are going through the process, so, for the 50,000 square feet or greater buildings, you look at them and you find the median and the ones below the median have to come above. And then in that year in

between compliance cycles, we kinda reached up on the deck and then you again look at the local median and the folks below that local median then have another five years to come above that.

So, it's a process that evolves over time in, as you're pushing buildings further and further towards a net zero decarbonization target.

So, one thing to note here—so, I think Nicole mentioned this, but you know, COVID has had a pretty big impact on many things in our buildings sector. And so, within the law, we're allowed to grant exemption requests based on hardships and so forth. And so, right now, or our first compliance cycle, we're pushing it back. The compliance date is gonna be pushed back a year. So, the standards will still be set by January 1st, 2021, but instead of having five years, they'll have six years to comply. So, that's been a recent development in the work that we're doing, trying to be responsive during the public health emergency. Next slide.

One of the big things that we've done is really engage stakeholders in the process, and I think it's really the best practice for anyone doing—well, any standard, not just BEPS, but anything that you're putting forward, D.C. has a long history of working with the private sector and public sector and nonprofits and industry groups just to figure out how new policies will affect it and move forward.

So, I would strongly recommend that for anyone as you move forward. We can talk about that more. If you have any questions, feel free to let me know. Next slide.

Just to highlight a few things, we had a kickoff event in 2019. We gave presentations, live polling, tabling. Next slide.

And throughout that, we had four different working group sessions, had a lot of attendees, a lot of different folks represented. This was like an informal process, and after that, we moved forward to a formal process, so the task groups that have been hammering out the regulations specifically, like, giving it more of the details. Next slide.

We also had representation of affordable housing working groups. We also worked with university campuses, hospital campuses—next slide.

And that sort of wrapped that up. The other thing we did recently is, we put out our score cards, and in our score cards, we gave

more information this time, we showed how people ranked and we showed, basically, how much savings they could have based on BEPS and how much their EUI would have to decrease, try to give people a sense—this is based on the 2018 calendar year data. Next slide.

Here's a picture of our task force. I gonna keep moving, here. Next slide.

Finally, the last thing is, we focus a lot on synonyms of financing assistance. There's a lot of—people are generally on board with BEPS, but there is a need for incentives, there's a need for technical assistance, capacity building, training, and financial assistance in a variety of different ways. So, everything from our Green Bank to PACE Financing to our energy efficiency programs is how we're looking to sort of fill that gap. Next slide.

With that comes funding. There's a fair amount of funding that was put in place in the law as well that has been put into these different institutions and into our program as well over a period of time. You can't have an implementation program without funding, and this is a very important piece of that. Next slide—or last slide, I think.

Okay. So, that's all I have at the moment. I look forward to any questions, and if you have any questions just generally for me, feel free to reach out by e-mail.

Adam Guzzo:

Thanks, Dave—appreciate it. We've got time for one specific question, which a few different folks asked in a couple of different ways, which is—you guys are a little bit further down the pathway, here, with your building performance standards, so we'll have time to talk about this more in the general Q&A, but any specific kinda lesson learned that you can convey to those folks who are early on in this process? Other jurisdictions that are considering a similar type of policy?

Dave Epley:

Right. So, I think—well, I mean, there's a few things that you could focus on. I mean, I think it's really important to establish a benchmarking program and be clear about your data and your buildings and get that sort of established soon so that you really can have a sense of where you're heading, where you need to go. And coupling with that, benchmarking is, you know, you're gonna be putting together, like, a plan for where you want your city, your state, your jurisdiction to go, and what you want that mix to look like, your energy efficiency, your solar and so forth.

So, those two things are really important to sort of establish that to do the studying that you need to do and the research. I mean, the other piece is really, like, for us, it's been really successful to get our private sector and a variety of different folks engaged, and working on and heading down the same path together. Which can be hard—I mean, we don't always agree on everything, but having everyone's input is really important and really valuable, because there's a lot of things you don't think of, you don't anticipate, you don't see, and people bring a lot of important things into question. I mean, the devil is truly in the details and it needs implementation programs whether it's codes or BEPS or anything like that. So, you have to—in hearing feedback of how this policy idea would be implemented in specific circumstances is really, really important. So, I would have that and—

Adam Guzzo: Yeah, that's helpful [*Cross talk*]. Let's stop there for time and we can dig in more on other kind of lessons learned or insights later on—so, thanks very much for your time. I appreciate it.

With that, we'll turn to Rajiv Ravulapati, who's gonna talk about what's going on in St. Louis. Rajiv?

Rajiv Ravulapati: Hi, everybody. Can you hear me alright?

Adam Guzzo: We can hear you.

Rajiv Ravulapati: Okay, great. Thanks. Yeah, like Adam said, my name is Rajiv Ravulapati with the City of St. Louis' Building Division, and I oversee our benchmarking and brand new BEPS policy. You can go onto the next slide.

So, just as background, our policy passed back on April 20th, so in the middle of the pandemic, and it's the fourth BPS policy of its kind in the country. So, a lot of this stuff, you know, that slide says why we led on this and why it's right for St. Louis. Here at the Building Division, we see that it's just the right thing to do. A lot of the new legislation that has come out of the city in regards to solar readiness, benchmarking, BEPS has all been crafted out of the Building Division and working with our local stakeholders, so. And in our region where it's very hot and there is a lot of flooding and how indiscriminate the effects of climate change are, it's really important for us, for municipalities to lead on this and not only just lead, but also make sure that we are actually passing legislation that is meaningful for our citizens as well as meeting our climate and public health goals.

So, we see that this policy has a lot of positive ramifications for our city and both our region. St. Louis is an independent city, so it's a city in its own county, and we have this strong relationship with our county. So, oftentimes, you know, the things that we do as a city, we try and get our local county on the outside of St. Louis to follow. And particularly for this policy, with our latest greenhouse gas inventory done in 2018, roughly 80 percent of greenhouse gas emissions come from buildings—specifically, commercial, industrial, and residential buildings. So, this is, by far, the most impactful legislation we've passed to date in terms of both climate and addressing our greenhouse gas emissions. You can go onto the next slide.

Our building commissioner often likes to talk about the intersectionality of codes and this policy. You know, at the end of the day, I think a lot of you realize that building codes, those suite of codes that each city has adopted, at the very base of it, it all matters on—it all stresses safety, particularly life safety. So, we had a—we passed our 2018 IECC building codes back in 2018 with almost, with no amendments to our energy code section. So, we kinda see these things, these policies coming into place in the past couple years with benchmarking codes and BEPS just as a natural progression in the enhanced operation maintenance and the retention of businesses in our city.

And also, it just, you know, it reinforces the community goals that we have with the city to lead on building efficiency, because you know, to tout ourselves, I think the past three years, we've gotten a lot of exciting work done in just the building space and energy efficiency space here in St. Louis. So, we want to continue this natural progression, because we got a solar ready ordinance passed last year and now we're looking to pass an EV readiness ordinance later this year. So, there's a lot of momentum, both within our board of aldermen and with local stakeholders around our city on getting these kinds of policies passed. And BEPS, by far, is the most significant landmark legislation we've passed as a city in regards to climate to date. You can go on to the next one.

So, I just put this up here because, for those of you who are considering a BEPS policy or some type of building efficiency in your city, you know, these are definitely some of the most important design decisions that you'll want to take into account—particularly equity. I'm gonna talk a little bit about two equity wins we got in our policy, but this was just a slide I wanted to make sure people saw and understand and stress the fact that these are the

important design decisions that we took into account for creating our policy here in St. Louis. You can go onto the next one.

So, with our policy, every jurisdiction has their own chief performance metric. Ours will be using site energy use intensity—for one, because it's owner controlled, you know, building owners can see how much energy they're using on site. We thought using source EUI originally would be unfair to building owners because there's certain things that are out of their control—things like distribution and transmission losses and the source of that power.

Another reason, too, is—this isn't as big of a topic as it is in California on the coast, but we see using this performance metric as the driver for building electrification here in our city. This is still a topic that's not getting enough attention as it should, both here in St. Louis, Missouri and the Midwest, but we're hoping that this policy has a pretty far reaching effect on both Kansas City, our neighboring city on the other side of the state; Columbia, Missouri; and for the region overall. You can move onto the next one.

So, with our policy, it's similar to benchmarking in the regard that it's the same covered buildings. So, our benchmarking policy requires buildings 50,000 square feet and above to track and report their energy water usage. BEPS will hit those same covered buildings. It's got the same exemptions as our benchmarking policy as well. Things like, if you're going through financial hardship; if you can verify your building is below 50,000; if you're primarily used for industrial or manufacturing, you're exempt; if you're below a certain occupancy percentage or there was a change of ownership. So, those are the exact same.

Our compliance cycle is a little shorter compared to D.C.'s. We have a four-year compliance cycle, and we have to have our standards set and ready to go for implementation by May of next year and then you've got until May, 2025 to comply. And there are no—there's not improvement requirements, they're not included, but they can be used as what we call an alternative compliance plan presented to this board that we're establishing called a Building Energy Improvement Board. That's one of the pieces of equity that I'll talk about in a little bit, but right now, it's all about we're not telling building owners, "Here's what you have to do." It's up to you on whatever measures you want to implement, so long as you meet the standard by property type. So, whatever your site EUI is based on you're a hotel, possible distribution warehouse—it's up to you to make those decisions, you just have to meet the minimum standard. Move on to the next slide.

So, like I said, equity is a really, really important component of creating any type of policy like this, because there's always gonna be your underserved and under resourced buildings. So, we gave affordable housing and houses of worship a longer compliance cycle. Both those property types have a six-year compliance cycle to meet their respective standards. Here in St. Louis, we've got a ton of houses of worship and a large chunk of—or actually, rather, an abundant chunk of affordable and multi-family housing. So, we—this was something that was suggested by our local housing advocates here in St. Louis and also the National Housing Trust when we presented our draft ordinance language for feedback. And this was something that our local affordable housing advocates feel was a necessary step in order to help these building owners comply. So, we're really happy to actually—and we were in agreement to have this kind of amendment with our compliance cycle.

I mentioned our Building Energy Improvement Board. This is something that was created through our legislation. So, this is a nine-member board that will oversee the finalizing and the approving of the standards by property type, though also meet on a quarterly basis to review alternative compliance plans. So, what I mean by that is, if you're a building owner who quite doesn't have the technical expertise or doesn't think you can meet the standard within those four years, you can present an alternative compliance plan for review by this board. They may lower the threshold for that building for that compliance cycle, but it's a really case by case basis in submitting your plans in front of the board.

And this was another equity component that our building commissioner actually created that we wanted to present to the community, because we understand that there's gonna be a lot of hand holding needed and expertise for these under resourced buildings. And also, this board will also come up with suggested template compliance plans, connect you to our generous incentives by Ameren and Spire, our electric and gas utilities, and we're also working on creating an energy, a buildings energy resource hub to also assist with these buildings as well. You can go on to the next one.

So, this is just a timeline showing the back half of last year about our community and stakeholder engagement. So, the one thing I want to say is, find your allies that will be helpful and sympathetic for your cause. For us, it was a lot of the property management

groups and affordable housing advocates that were pushing for the passage of this policy. You can go onto the next one.

This is just a slide of an example, a photo of an example of our stakeholder meetings. We held one every two months during 2019, and we met pretty regularly, and we met for about two hours at each of these informal meetings, and this was a stakeholder group comprised of utilities, labor, affordable housing advocates, various city agencies, commercial building owners—so, a pretty diverse group when it comes from the organizational aspect. You can go onto the next one.

This was a supporter list that we put together when we were lobbying to various stakeholders and to our elected officials. We had a lot of ESCOs and design professionals sign on, which isn't surprising to see. We had a lot of green advocates, but we also had, you know, local hotels like the Embassy Suites sign on, and also BJC HealthCare. BJC is our hospital and health care system here, and they're our largest employer in the city of St. Louis, and they have a lot of weight that they throw around, and so, it's great to get their support.

I'll try and speed it up. You can go onto the next one, Adam.

I kinda talked a little bit about this board right now, so we can move on past this one. I'd like to get to the lessons learned section. I talked already about the board.

So, the thing I wanted to relay to folks is, we had a couple keys to success and the lessons that we learned is, one, we've had this Benchmarking Implementation Stakeholder Advisory Group for the past three years now. So, we've had this coalition to help guide us towards BEPS. And we also work with a lot of outside partners, particularly our local chapter of the USGBC, they're called the USGBC-Missouri Gateway Chapter. So, having that coalition who can help organize on behalf of the city as well as in conjunction was really crucial in making sure we reached and talked to as many people as we could, because we wanted to stress transparency through this whole process.

Secondly, that photo you see in the middle, the gentleman is our building commissioner and that woman is an alderwoman. She was the main sponsor of the bill, and she was with us every step of the way in developing the process and came to the stakeholder meetings and went to bat for us when we needed to on the policy.

So, having your local elected official in that buy-in and leadership process is very important.

And the last thing I'd wanna mention, too, is, you know, we are lucky in some regards—if you go to the last slide, Adam—is that we're an ACCC city, an American Cities Climate Challenged city, so we've got a lot of funding and technical support from the Institute for Market Transformations and other organizations to get this policy passed. We couldn't have done it without these, with all those countless hours of I&T going through our ordinance and helping us develop content for how we engage stakeholders.

Adam Guzzo:

Thanks, Rajiv—appreciate your time. I know you've got some other lessons learned that you have in your deck, here, but I wanna give folks a couple of minutes to ask questions before we wrap up. And I think one of those questions that a few folks have asked is kind of what are some of the insights that folks have learned.

But before we open that up to the whole panel, there was a direct question that came to both you and Dave about how many categories of buildings are there—are there allowances for energy intensive usage? So, Rajiv, maybe you can just address that quickly, you know, 30 seconds or less for St. Louis.

Rajiv Ravulapati:

Sure, yeah. So, we're still, right now, we're still in the midst of the rule making—so, the question is how many categories of buildings are there, okay. There's gonna—I don't have an exact figure, because we're still going through. We're waiting to get our 2019 benchmarking data in, so we'll have three years of benchmarking data to help inform the standards, but there is definitely gonna be—you know, it'll be double digit categories. It'll probably be somewhere around the 20-ish, 20 range, but I don't have an exact figure yet.

Adam Guzzo:

Dave, anything you wanna add there in terms of, from the District's perspective?

Dave Epley:

Sure. So, we're aligning with Energy Star's property types in the categories as they define it there with the caveat that when there's something that doesn't plainly sit in, like a university campus, at this very moment, we are looking at those specifically. But if you look at those—I can't remember the exact number, but yeah, like, a dozen-ish plus, somewhere in there.

- Rajiv Ravulapati:* Yeah, we're following the same thing using Energy Star. I think they've got 24 properties that are eligible for an Energy Star score, but we're looking at those similar property types.
- Dave Epley:* Yeah.
- Adam Guzzo:* Great. There was a question that came in earlier that I think is relevant to all of you—"Are there fines or penalties for not meeting compliance with some of these policies that you've talked about today?" Dave, do you wanna take it first?
- Nicole Ballinger:* I'll jump in—sorry, Dave.
- Adam Guzzo:* Yeah, Nicole? Yeah—go ahead, Nicole.
- Nicole Ballinger:* There are, and they're listed on our website. Yep.
- Dave Epley:* Yes, I mean, so, we have the law in place, we're finalizing the regulations. I think similar—it sounds like same as them. But the goal would be that the fines would prevent people from wanting to follow the path of a fine, and it's more than cost of business or cost of compliance. So, we're looking at that. It would be a scaled fine based on the size of the building and probably the type of building as well.
- And, like most things, similar to the energy codes or the code compliance, the fine is a starting point for a conversation, and at the end of the day you want compliance with the actual law. So, things get to be tapered back depending on what sort of mitigation plan comes up at that point in time. So, we're finalizing it, but yes, absolutely.
- Adam Guzzo:* Why don't we do this and wrap up on a high note, which is—you know, just quickly, in 30 seconds or less, kind of one key insight or lesson learned from each of you as you've worked on these policies and programs in your respective jurisdictions. And Nicole, why don't we start with you?
- Nicole Ballinger:* Yeah, sure. I would say that, you know, throughout all of our policies, really making sure that we have strong technical support and don't just necessarily rely on the rule language or the ordinance, that we really have communications that are focused towards building owners that help tremendously. Having a help desk is incredibly important for any type of policy, it builds a lot of good will. But I'd say that's really the most critical thing. You just,

you can't have enough support, and you can do it reasonably cost effectively, I think, so.

Adam Guzzo: Great. Rajiv, you're next in line on my screen, so do you wanna take that one quickly?

Rajiv Ravulapati: Yeah, I mean, [*Cross talk*]. Sorry for my voice cracking there. I would stress, I would echo what Nicole just said. For sure, having that technical support is really important. Like, we couldn't have gotten this policy done if it wasn't for the help of IMT. The other thing I would say, too, is you know, most municipalities working on this probably have, you know, short on staff or short on time, short on capacity.

So, like, working with your trusted organizations and allies within your community is really crucial. Like, I can't say enough good stuff about our local USGBC because they're really, you know, what helped, brought benchmarking to St. Louis and what helped us get BEPS passed as well as be our outreach and education partner. So, having those trusted organizations in your communities will definitely be needed in these kind of policies.

Adam Guzzo: Yeah, that's a great point. Dave, anything else you want to add? I know you talked a little bit about lessons learned and insight.

Dave Epley: Yeah. I mean, I think with any policy, you need to have funding set in place to have a team to do the work. I think that's really important to set aside for that. Otherwise, any policy that doesn't have, like, funding for implementation just won't happen at the end of the day, because you need capacity and training and technical assistance and the oversight and those types of things.

The other thing I was gonna say is, like, a lot of us are used to working in what I would refer to as a design and construction standard, like, the codes where you design, you build, you inspect and then it's done and what happens afterwards doesn't matter necessarily or there's not any repercussions. But this is an outcome based standard, and so, when you move to an outcome based standard, the considerations are gonna be different. And the way—there's a little more on the line and it definitely makes people more inclined to do this. Plus, it makes people more gullible, it makes them a little more worried about what'll happen.

So, in that space, I think it's really important to have this outreach and partnership and working together to get this right from the city government to the private sector and everyone else involved. Like,

you have to be in it together. It's a process for everybody. So, it promises, you know, greater outcomes, but it's a different way of thinking, it's a different way of operating.

Adam Guzzo:

Thank you, all. We are just at 2:00 here. For those who are still with us, if you can hang with us for a couple more minutes, we'll knock out some additional DoE resources that you may want to be aware of as well as a couple of funding opportunity announcements. So, that's hopefully enough to keep you on the line.

Here are three DoE resources that I won't have time to go through today, but I would encourage you to take a look at. Again, these slides will be recorded, but these may be helpful resources to you as you're thinking about some of the activities in buildings, some of the actions you may want to take in your jurisdictions to encourage energy efficiency in buildings. I'm gonna go to the next slide.

There are also some additional resources that our speakers suggested may be helpful, were helpful to them, so those are included here. And then the next slide.

We also have, you know, we know that folks' jobs look really different than they once did. And so, if you're interested in online training and educational opportunities, at least, you know, your job may not be different, but your environment certainly is. So, here's a resource for you in terms of an e-learning center through our Better Buildings Solution Center. There's webinars and courses and other resources covering a range of topics across energy efficiency that you may be interested in, so I encourage you to take a look at that. The next slide.

So, I want to highlight two EERE funding opportunities that may be of interest to you. This first one is called the Proving Ground Public Sector Field Validation. It's a funding opportunity announcement we released on June 26th. So, projects under this FOA will be funded by our EERE Building Technologies Office and administered in partnership with EERE's Weatherization and Intergovernmental Programs Office—specifically, the Save Energy Program.

We held an informational webinar back on June 30th and the slides from that webinar are accessible on EERE Exchange for the full posting associated with this announcement. There's up to \$10,000,000.00 in funding available and awards can be up to

\$1,000,000.00 each. Successful proposals will include the validation of technologies and/or the validation of operational changes to achieve energy and load flexibility in commercial or multi-family buildings. Technology areas of interest include but are not limited to envelope and window technologies for existing buildings, integration of thermal storage, direct use of advanced natural gas efficiency technology solutions for in-use building sector applications, and flood load identification, controllability, and optimization. You can see the deadlines there on the screen, so I encourage you to take a look at the announcement if you're interested. Next slide.

We've also got another opportunity I want to make you aware of. We actually issued a Request for Information earlier this year. The RFI was to gather feedback on a potential funding opportunity announcement that DoE intends to release soon and the FOA would invest over \$40,000,000.00 into connected communities. You can see how we explain what a connected community is below the picture, there. And through this anticipated flow, DoE wants to demonstrate and evaluate the capacity of buildings as grid assets by flexing load in both new developments and existing communities across diverse climates, geographies, building types, and greater regulatory structures. So, again, you can go on EERE Exchange to learn more about that. Next slide.

Just a quick overview of our webinar series this summer. You can find more about those as well as the previously recorded webinars on our website. Next slide.

This is our next webinar. I hope you'll join us. I'm not gonna speak to it from a time perspective, but I think it'll be a great set of content we have planned, so put it on your calendar—next Tuesday, July 21st. Next slide.

And I mentioned a few times our Better Buildings Solution Center. So, this is our portal for accessing all of the work that we do in Better Buildings with our partners in National Labs. You'll see through the animation here, it's gonna take you to our local government sector page, and on that page, you can find everything from showcase projects that show actual energy and cost savings as well as other types of resources to overcome specific barriers to energy efficiency. So, I encourage you to take a look at the Better Buildings Solution Center if you're not familiar with it. There's a lot of great resources throughout that website. Next slide.

On top of the work that we do through Better Buildings, our office also hosts a number of tools, resources, and best practices on our State and Local Solution Center, so this reflects work that we do more broadly with states, local governments, and school districts. So, I encourage you to check out the State and Local Solution Center. You can subscribe to our newsletter, and if there's a question you have, you can't find a resource you're looking for, there's a contact there at the bottom where you can reach out to us and we can get you pointed in the right direction.

And then, before we let you go, for those who are still with us, we've got a poll that you'll see coming up in your Slido. Just tell us how we're doing. We want to know if this session hit the mark, if it was on point, so we'd appreciate your feedback.

And then while you're filling out that, I just wanna say thank you, again, to our panel. Thank you, Dave; thank you, Rajiv; thank you, Nicole. We really appreciate your time today. Thanks for your insights. And this is where to find all of us. If you have questions, feel free to reach out, and we hope that you have a great rest of your day and a great rest of your week. Thanks, everyone. Take care.

[End of Audio]