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Brooke Holleman: Alright. Good afternoon, everyone. I'd like to welcome you to the October edition of the Better Buildings webinar series where we profile the best practices of Better Buildings partners and other organizations working to improve energy efficiency in buildings. Today we'll be discussing energy efficiency and renewable energy in small and rural K-12 schools, featuring recent DOE resources focused on rural schools and the experiences of four stakeholders serving rural school districts across the country. My name is Brooke Holleman and I am a fellow in the US Department of Energy's Office of Weatherization and Intergovernmental programs where I serve as the K-12 sector lead for the Better Buildings initiative and as your moderator for today.

So for our agenda today I'll provide a quick introduction to two of DOE's recent resources for energy managers and educators in rural K-12 schools, and then we'll hear from a star lineup of speakers who are working directly with rural districts to achieve energy and cost savings through energy efficiency and renewable energy. Each will speak for about 10 minutes each and then we'll open it up for questions and answers at the end. And I will introduce them now. So our first two speakers will talk about benchmarking.

First up, we have Karen Lasure. Karen has been an energy development specialist with the West Virginia Office of Energy since 2015. She has a Master of Science and Management from Emmanuel College in Boston and a Bachelor of Science from West Virginia State University. With over 17 years of experience in project management, grants and program administration, she is responsible for over 85 percent of state energy program-funded projects in West Virginia, most of which focus on energy efficiency, energy assurance and resiliency.

John Balfe works on the Buildings and Community Solutions team at Northeast Energy Efficiency Partnerships, or NEEP, to help drive energy efficiency in new and retrofitted schools and public buildings throughout the region. John works with various industry stakeholders to advance public policy with high performance building standards and including facilitation of information exchange and knowledge transfer between states and programs. He graduated from the University of New Hampshire with a Bachelor of Science in community and environmental planning.

Then we'll hear from Scott Slusher to hear about an innovative state funding model. Scott Slusher serves as the Deputy Director of

the Tennessee Energy Efficient Schools Initiative. He has a proven track record of successfully implementing over \$200 million in energy efficient solutions. He's managed risk-averse financial mechanisms and implemented successful models of energy efficiency to state and local governments and educational institutions. Scott specializes in strategic design and implementation of energy efficient programs.

And finally, we'll hear from Trudy Trimbath at Poudre School District. Trudy is the Energy and Sustainability Manager for Poudre School District in Colorado, a role she has held for the past five years. Poudre School District has been an active participant in the city of Fort Collins ClimateWise program since 2006, achieving the highest level of recognition. PSD is also a 2016 US Department of Education Green School District winner and a gold-level leader in the Colorado Department of Public Health Environmental Leadership program. Trudy earned her master's degree in environmental policy and in management from the University of Denver.

We are also proud to call Poudre School District a Better Buildings Challenge program. Thanks to all of you for being with us today. So before we dive in, we'd like to take a quick poll to see who's joined us in the audience today. More specifically, we'd love to know what your relationship is to small and rural schools, either directly or indirectly. Please select the role that best describes you. Poll will close in just a few minutes once we get enough participants.

Alright. The poll has closed. Alright, lots of folks who work indirectly with rural school districts, but a good representation from lots of folks, lots of state folks and energy service providers. Great to have you all on. Awesome. Well, thank you all for participating. I'd like to tee up our presentations today by sharing a few insights from recent research coming out of DOE with support from our partners at the National Renewable Energy Lab.

We know we can characterize rural schools by their unique challenges, but with that comes ample opportunity for significant energy and cost savings achievable through energy efficiency and renewable energy. And to put this opportunity into perspective, rural K-12 schools education about 14 million students and represent over 30 percent of US public schools. These facilities also serve multiple community purposes, such as a gathering place for a community event or as an emergency shelter during a natural disaster, which can add additional energy management

considerations. Rural schools can also be geographically large as well as remote, and due to staffing constraints may leave staff wearing multiple hats and serving in different roles with limited energy management experience.

Additionally, necessary equipment services for commercial equipment may be expensive or unavailable due to distance from urban centers. So to help overcome these barriers we've created the following two resources. First, energy efficiency and renewable energy resources for rural K-12 school energy managers and educators, help states, local school administrators, school boards and facilities personnel supporting rural school districts make prudent decisions around the use of funds for energy efficiency improvements as part of their master facilities management plan. It also includes resources for K-12 school district to provide some best practices and resources for implementing energy efficiency in rural schools.

The second document, rural K-12 school facility workforce development and training, includes materials, trainings and certification courses designed to provide building operators at rural K-12 school facilities with actionable steps to improve their energy efficiency knowledge and create comfortable, cost-saving, and energy-efficient learning environments. You can stay connected and up-to-date on impactful research and tools coming out of DOE by heading to the state and local solutions center and subscribing to the state and local spotlight newsletter, which brings you the latest research and updates every month.

So before we get started with our presentations, I want to remind our audience that we will hold questions until the end of the hour. Please send in questions through the chat box right there on your webinar screen throughout the session today and we'll try to get through as many of them as we can. The session will also be archived and posted to the web later for your reference. So to start us off, we're beginning with two presentations on a foundational strategy in energy efficiency, which is benchmarking. We'll start off with West Virginia's Energy Benchmarking Initiative from Karen with the West Virginia Office of Energy. Karen?

Karen Lasure:

Thank you. Sorry about that. I forgot to unmute myself. We here at the West Virginia Office of Energy were lucky enough in 2018 to be selected for a competitive state energy program grant award for \$300,000. The idea was to – the goal of this whole project is to benchmark energy performance in all of our state-owned buildings and to work with state agencies to develop a policy for annual

benchmarking and public disclosure and develop an actual draft policy to hand to our state legislature by the session for 2022. The primary focus was for us to start with K-12 schools and to benchmark all of these schools into Energy Star Portfolio Manager. This project is actually – has three tiers, it's a tripartite mission.

One, is the overarching goal is to actually – oh, advance that slide one more time. There we go. The overarching goal is to provide this draft document to our state legislature, but the other two focuses are on, one, the buildings, the K-12 buildings, to actually get them benchmarked and to provide a foundation and place to start, and also there is an educational component in this project to start training, training the kids in the schools on building science but also to train the facility managers and the staff at the schools to continue this benchmarking activity after the project is over with so that it will be a sustainable activity. The partners that we have brought in for this project, one is our state ASHRAE chapter, and they are providing all of the – they're helping with data collection and they are actually providing pro bono support to certify the data that's going into Portfolio Manager.

The other partner that is helping with training and with data collection is our West Virginia University's School of Engineering and Mechanical Engineering Department. They are providing audit activities as well as data collection and some other training activities for staff and teachers in each school that's participating. Another is the National Energy Education Development Program out of Washington, D.C. They're going to be bringing in the energy education component for the K-12 schools. Next slide, please.

Okay, why benchmarking? We actually had – when I came in to this position in 2015 I had no clue where to start. We were starting from scratch. And I decided to use benchmarking because you can't control what you don't measure, so this seemed like a good jumping off point for us. It allows us to compare our buildings and figure out what we're going – what we need to do and figure out the buildings that have the best opportunity for energy savings. It also provides an opportunity to use the building as an educational tool itself. Next slide, please.

Okay, so far we have been coordinating very much with the West Virginia Department of Education's Office of School Facilities and with our School Building Authority. It is paramount that we work with these two entities because they're over the school facilities for the entire state. We presented to a school facilitators' annual meeting in July where we were able to talk to 500 representatives

from state schools. The map that you see, so far we're not quite a year into the project and we have a total of I think 22 school districts or counties that have been participating so far. Nine have actually been benchmarked into Energy Star.

Five we have EUI benchmarks, which is the energy use intensity. Two have just come on board. Those are the ones in blue. And the stars recognize audit activities through WVU that we've done in the past with these counties in the schools; however they weren't benchmarked at the time. So far we've – this says 17 counties but we're up to 22 now, with almost 300 buildings that we've been able to benchmark. Both utilities in the state, electric utilities, have come on board. They're very supportive. Our AEP has the southern part of the state and they have committed to providing energy use data history for 36 months prior to the start of the project, and we're working with them to come up with a solution for automatic data transfer for these schools districts for after the project is over with to help them with some of that burden of collecting and inputting this data into Portfolio Manager.

First Energy is the servicer for the northern part of the state and they are considering using this – doing the same for us as AEP. Since this project has started, our West Virginia Office of General Services, which covers all of our buildings in the state, have engaged with us to help them to benchmark their buildings as well. They had been doing a form of benchmarking in the past; however, they were benchmarking to the dollar rather than to the EUI. One of the benefits of Portfolio Manager is it takes the price of the utilities and the fluctuation and the pricing out of the equation, so you get a miles per gallon for your building. You know, so it takes some of the variables out and provides a consistency.

We're also working with the cities of Charleston and Huntington, which are the two largest cities in the state to provide them with some help on starting to benchmark their buildings as well. Next slide, please. Okay, what is next? We are currently looking at providing some recognition for our top-performing schools, providing recognition from our governor's office and also providing some monetary incentives to the schools and to the teachers that are involved. We're working with school staff to help identify the schools that have the opportunity for additional – or the most energy savings opportunities through WVU, and ASHRAE will be auditing those schools at no cost and providing the assessments to school facility staff.

Training for staff and facility members, we're gonna utilize our regional energy efficiency organizations to do a benchmarking 101, to do building operator certification and other training opportunities that I can pull into the state. All of the participating schools will be receiving resources and materials through the Need Program. These are building science and energy kits, providing training and opportunities to engage in energy fairs. We're also in the middle of establishing the policy development steering committee, which is going to be comprised of several different organizations or state agencies in the state that hold the largest real estate portfolios. And that is all I have. So if anyone has any questions just let me know. Thank you.

Brooke Holleman: Alright. Thank you, Karen. It sounds like you all have some really great partnerships set up and are on the road to some great success. Up next we have John Balfe from NEEP to talk about their benchmarking efforts in New Hampshire. John, take it away.

John Balfe: Great. Thank you, Brooke. So yeah, as Brooke mentioned my name's John Balfe with Northeast Energy Efficiency Partnerships. I'm excited to be a part of this great panel here today talking about one of my favorite and what I think is one of the most important building types that we have. I'm probably a bit of an outlier on this panel as I don't work for a state or a school district, so maybe coming at this from a bit of a different perspective than some of my other panelists here, but during my presentation I hope to briefly highly who NEEP is and the work that we do, so I'll dive into that in a second here, and then the work that we're doing in collaboration with the State of New Hampshire, and then I'll wrap up with a couple of resources that we've developed that might be of interest to some of the folks on the line here.

So on my next slide here I'll just quickly cover who NEEP is. We are a regional nonprofit organization that's committed to improving energy efficiency in the building sector throughout the Northeast and MidAtlantic states. We work everywhere up from West Virginia up to Maine and we are one of six regional energy efficiency organizations that Karen just mentioned actually. You know, I definitely urge you if you're joining the webinar today from outside of the Northeast or MidAtlantic states to get in touch with your local REO and see what types of projects they're working on and what assistance they might be able to provide you with.

So now I'm gonna focus the rest of my presentation on the work that we do with the State of New Hampshire. And you can go to

the next slide please. So it's our goal in our work with the State of New Hampshire to provide all communities with healthy energy efficient learning environments. That's kind of our core goal. So in New Hampshire the story has been, you know, much the same as many other rural areas. There's limited funding for school projects, there's an overall lack of bandwidth or resources at the local level to be able to take on energy efficiency projects, and it really just falls lower on the totem pole compared to the many other hats that some school stakeholders are wearing.

Just a little bit of background, back in 2010 the state imposed a moratorium on school construction, so there's no longer any state aid for funding school projects unless there was major safety and issues – safety issues in the schools. We've worked with the state on various other initiatives, but started again in 2016 working on schools. So we came together with the state's Department of Education and we began to facilitate a group called the New Hampshire High Performance Schools Working Group. So this group consists of a number of state agencies including, like I said, the Department of Ed and the Energy Office, which is called the Office of Strategic Initiatives in New Hampshire, and then there's also school district representatives, so folks representing kind of the business officials.

The school board association is a part of this group. The facility directors to the folks, you know, working directly in the buildings are a part of our working group. And then we also have the EPA Region 1, the local utilities, and then some folks working on the design side of things. So kind of a broad spectrum of stakeholders get together on pretty much a monthly basis in this working group to really discuss what some of the needs are in the State of New Hampshire so that we can get to that ultimate goal of providing high performance schools for every community. So in 2016 we got together again and, you know, discussed some of the opportunities and we tried to kind of lay out this roadmap that you see here on this right side of the screen or this, you know, high-level plan for the next few years.

We covered things, as you can see on the slide here, from holding a high performance schools workshop, so trying to educate folks about what a high performance school is, to doing a tour of a high performance building and really showcasing what these schools look like and getting people energized and excited about them, and then also as you can see here as well, benchmarking. That's kind of gonna be my focus for the next couple of slides here. Last year in 2018 – you can go to the next slide – we determined that we

needed a lot more data when it comes to the schools in New Hampshire to help us get to our end goal. So this really – the purpose of collecting this data would be to help us understand the current state of schools in New Hampshire, you know, how are schools performing energy-wise, who should we be targeting, and hopefully it would help to inform a future bill that would come into play for state aid at the local level to help fund projects at the local level, I should say.

So this was kind of the need that we saw. Last year, with the working group that I just described, we developed a simplified benchmarking worksheet that I'm happy to share with anyone on the phone today, and basically this allowed us to collect the bare minimum of information in order to get schools set up in EPA's Portfolio Manager, you know, understanding that schools have limited bandwidth and don't have a lot of time to dedicate to this type of task. We wanted to make it as simple as possible for them. So we developed this benchmarking worksheet and we were able to get some good results kind of early on. So with this benchmark initiative I think there's a few things that worked really well, the first one being – and I think Karen did a good job of describing the importance of this as well – you know, being in collaboration.

So we had the State Education Department, they were able to send out emails to school districts throughout the state saying that this benchmarking program is being set up and that we're offering free benchmarking and all you had to do was basically provide the information needed in the worksheet and then we would actually have somebody from EPA that was going in and setting folks up with their Portfolio Manager account and actually inputting the data. So having those partnerships I think was really key to getting folks on board right away. Just as important was that simplified benchmarking worksheet, and then other working group members were really key in doing outreach to school districts or doing some presentations throughout the year to different stakeholder groups in some of the utilities.

We were able to talk about some of the incentives that they have, so not only we were trying to offer this benchmarking piece but we were trying to show folks that you can take on these projects and there's incentives available from the local utilities to do so. Those are a few of the things that I'd say were key takeaways that worked. A couple of things that were challenges along the way and that remain challenges today are that it was good that we simplified this process for schools and actually did some of the data input, but unfortunately that kind of led to schools maybe not

keeping up with their portfolio manager account beyond just kind of that initial data dump, so that was one issue that we found. And then early on we had a lot of kind of the early champion folks that were really interested in energy at the local level.

Those were the folks that we saw participating and that kind of – you know, we saw the number of schools benchmarked really shoot up there quickly, and then trying to engage with some of the others that – you know, the more rural communities that might not have been as interested or had the time to take on these projects. You know, that's been a challenge to do outreach to them and get them on board. So on my next slide here I can just show you quickly some of the results that we have to date, and this is just kind of over the course of the past year or a little over a year now. So you can see the number of properties that we've benchmarked, the average Energy Star score that we have for all those buildings, the site and source EUI, and then the total area.

So like I said, we were able to get some quick numbers really in the beginning of this program, which I was really excited about, and then over the past few months we have struggled a little bit to increase these numbers, but I think our goal next year and at the end of this year is to try and increase these numbers by doing some outreach activities, doing a webinar, engaging some of the other associations in the state, like the School Business Association, School Board Association, and some of the facility directors to try and get them on board in this as well, but it's just kind of helpful to see where we're at right now and the overall performance of schools in New Hampshire. So on my next slide I'll share a little bit more about some of the results that we have so far.

So like I mentioned, the partnership that we have with EPA has been really great in getting people on board and they were also able to put together these GIS maps that I know are kind of hard to see, but I think the point I wanted to show here is that we're able to kind of look at the state as a whole and see where some of the gaps exist in the middle of the state or some of the more rural parts. You know, a lot of the schools that we had benchmarked are in kind of more progressive or in communities where there are more resources dedicated to these types of things. So looking at the state as a whole this has helped us kind of figure out where the gaps are and see on kind of a statewide basis who the really well-performing buildings are and who isn't performing as well.

So just kind of one way to display this data and, you know, I'm sure over the next few months we'll be adding to this map and

getting more schools benchmarked. On the next slide, you know, I want to provide a little context about what we're trying to do with this data. As Brooke and Karen kind of teed up, benchmarking is a key first step to taking on energy efficiency projects, but it is just that first step. So we're trying to think about now how to take this to the next level and actually implement energy efficiency in schools and have schools take on projects. So we're very excited about a recent bill that was passed in New Hampshire.

That's House Bill 175, that actually reinstates state funding for school construction projects, and new this time around is an element about high performance features in school projects, so the state is able to actually rank projects based on – well, including elements of high performance. So if they – you know, if they're targeting a high EUI – or excuse me, a low EUI or a high performing building, then they get ranked higher and are more likely to get funding. So we're very happy to see that and we hope that some of the benchmarking data that we have already is gonna be used to kind of show what buildings are not really performing well right now and then hopefully post construction or post renovation we're able to show some of the huge improvements and strides that schools are making.

So that's kind of the exciting thing that we're working on right now with the state to define what exactly high performance means, but there's some great opportunity there over the course of the next few years with the state aid being reinstated. And on top of that, you know, we're continuing on our benchmarking efforts but we're kind of turning a little towards education about high performance schools and how school districts can be working with their architects or engineers or goals that they should be setting within their RFP process so that they are selecting and making commitments to energy efficiency within their schools, so we're trying to do some outreach and education on that side of things, working with school building committees and the facility directors to ensure that these types of features are included.

So to that end, we're developing a toolkit that will have a lot of this information and some of the good content that DOE has developed will certainly be included in these toolkits that we're developing, and then we're gonna continue to facilitate this working group as we see as a great partnership that we have in being able to kind of identify those opportunities and do presentations and do other engagement activities with local stakeholders so that high performance is included in projects going forward. So that's kind of the journey that we're on now, is trying to tackle some of those

pieces using the benchmarking data that we have to inform projects going forward. So I think on my next slide here I just wanted to share a few resources that we have at NEEP, and like I said if you're not in the NEEP region definitely urge you to get in touch with your other local REOs, but there's a couple here that you can see on this slide.

We have an operations and maintenance guide that catalogues a lot of best practices, low to no cost measures that you can take in your schools to improve energy efficiency and also improve things like health and reduce absenteeism, those sorts of things, so definitely urge you to check that out if you are interested in improving the operations of your school facility. And all these resources are free and are right on our website. And the last thing I'll mention is we do have a number of case studies that look at high performance schools throughout the NEEP region, so schools in New Hampshire, schools in Massachusetts, Rhode Island, and throughout the region there on our website if you're interested in learning more about some of the benefits and impacts that high performance schools have at the local level.

So I think that is all I wanted to cover, a really high level kind of overview of what we have going on in New Hampshire and some of the resources we have. Happy to chat further offline with folks. If there's any more information I can provide I'm happy to do so, but yeah, that's my contact information, so thank you very much.

Brooke Holleman: Alright. Thanks, John. That was great. Quick reminder to send in any questions you may have throughout the webinar to the chat box on the screen. Thanks to those who have submitted questions so far. We are collecting them for our Q&A period closer to the end of the hour. Next we'll move from benchmarking for energy efficiency to an innovative state funding model, specifically the State of Tennessee's Energy Efficient Schools Initiative. So Scott, you are up next.

Scott Slusher: Alright. Thanks, Brooke. Good afternoon to everyone that's on the webinar. I appreciate you taking your time to join in on the conversation. I'm hoping that you're gonna take away something that you can implement in your state's program or in your local school districts. As Brooke mentioned, my name is Scott Slusher. I'm the Deputy Director for the Energy Efficient Schools Initiative and I serve as our organization's professional energy manager and energy consultant to our Tennessee School Districts. I'm really excited and appreciate the invitation to share our success at the Energy Efficient Schools Initiative, or EESI – if I can shorten that

down that'd be great – and really we're here to tell you about how we're impacting and improving the classroom learning environment in Tennessee schools.

Before I get going I thought I'd give you an overview of Tennessee's Public Schools so you can sort of compare them to your school districts and to your state. So, the next slide please. Tennessee's Public Schools overview. This is from the previous school year, the 2017 and '18 school year. The State of Tennessee is divided into three grand divisions. We have East Tennessee, Middle Tennessee, and West Tennessee, which consists of 94 counties. Of those 95 counties, our rural counties we have 78, and in total we have 144 school districts across the state and our students attend school at 1,800 schools with a population just under 1 million at 965,000, which is about 36 percent of our student population does attend a rural school.

School square footage for our Tennessee schools is a little under 170 million, and the total operations budget for all districts is \$9.48 billion per year. If I can go to the next slide. So since this is on energy efficiency I thought I'd better talk about some utilities and energy in the school systems, and if you look at the pie chart on the right side of your screen, 85 percent of our utility expenditures is electricity, and total across the state, which includes sewer, water, natural gas and fuel oil, all of Tennessee schools spend about \$252 million a year just on utilities, and that breaks down to \$274.00 per student or \$1.48 per square foot of our school districts.

That number there, \$252 million, is a huge number and it actually represents 45 percent of operation and maintenance of each school, and I bet that's probably the same, is true in your school districts and in your state, that if you looked at the operations and maintenance, so to turn the lights on and have a place for the students to go to school, 45 to 50 percent of that spend goes directly to utilities. And that's really what got the conversation started in our state to really try to figure out how can we help our school districts and especially our rural school districts? If I can have the next slide please. At EESI, our main mission is to improve the classroom learning environment through energy efficiency strategies and we really are – we're more than just a funding model, but we do try to show school districts how they can reduce their utility cost and then use that money to fund projects, whether it's HVAC or lighting or building envelope upgrades in their school districts, we try to encourage them and help show them the pathway to achieving that goal.

And that's what we're doing today, but if it really wasn't for the piece of legislation that created EESI this would not exist today, and it was actually funded – the legislation was crafted back in 2008 by a Democratic representative named Les Winningham, and he had attended a conference where he heard about another state's energy program kind of like similar to what we're doing today. He heard about it and he got really excited about it, and he's from a rural county in Tennessee and said, "Why can't we do that here?" So he went ahead and crafted a bill, and the other interesting part about EESI, it was a bipartisan effort. So Les Winningham reached across the aisle to the Senate to who's now our Lieutenant Governor Randy McNally, and asked him to cosponsor this bill to really show or to implement a funding model for schools to reduce utility costs and improve the learning environment that they were in. Next slide please.

That was really key and probably what our director Paul Cross and I both refer to as one of the best pieces of legislation that we've seen. We got that. But with any legislation it comes down to how do you fund it? So Les and Randy and the general assembly discussed through different things, and at the time the State of Tennessee had taken some of the – well, not taken some of the lottery funds – there was a lottery fund that had been created to provide grants and to students for higher education, and over the course of a couple of years of the funds that they set aside for that, it was earning interest and there ended up being a lottery reserve. And so Les and Randy went to the general assembly and they discussed it through a little bit and they were able to come up with an initial \$90 million of excess lottery funds that were available for a program such as EESI.

So they went ahead, that legislation was passed in 2008, the \$90 million came into our account, and we began working in the school district. It took about a year. There was a – part of the legislation started up a council, the Energy Efficient Schools Council, and were discovered by 12 members. There's the Commission of Education, Environment Conversation, Economic and Community Development, and then both the governor, the Speaker of the House, and the Senate actually appoints some members to our council. They went through and spent about a year coming up with what the model should be, and the best way to look at ESI – where we are today is amazing, what we've accomplished, and I'll show you some of the results.

But it wasn't done overnight. It really was – you have to look at it in a series of phases. And so the original council, who we still have

some of the same members, worked really diligent and hard to come up with the framework and the model of the program. One of the things that they did early on was to establish a technical advisory committee, and that five-member technical advisory committee had required – by legislation it had to have an engineer that was – or had to have an engineer that understood LEED, sustainable building, green building technologies. Also we had a point to go out and find somebody who was an architect and could represent the architects. We also reached out to the public power companies and they selected a member to be a part of that as well as TVA and Oak Ridge National Labs were a part of that technical advisory committee.

EESI, we're a small team here. We're a team of three that manages the day-to-day, and we have our executive director Paul Cross, myself, and Barbara Floyd who's our executive assistant. We run an efficient operation here, and so I'm excited to tell you more about that. Go ahead to the next slide. Some of the services that we offer for our school districts. Besides just being a funding model we do offer feasibility studies or energy assessments, so we'll come in and do level-one energy audits. We also review existing proposals.

So if an individual school district has decided to do a lighting project on their own we'll review and provide technical specifications for that project to make sure that they have the latest, the greatest, and all the information that they need to make sure that they have the best lighting for their classrooms. We also help with utility bill tracking and analysis, and I'll talk more about that and what we've done with the Energy Star Portfolio Manager, and we also provide strategic energy management planning, and we're actually launching in January of 2020, in collaboration with the Tennessee Valley Authority, we're doing a pilot project with eight school districts, which are rural school districts in the state, and really taking them step by step through the strategic energy management process over a year.

And the goal of that is really to hopefully educate the maintenance staff and provide an opportunity for them to identify ways to do energy cost in their school. EESI funding. To be available – or to qualify for funding you must be a public K-12 school or a special school district in the state, and as of last year we did open it up to the public charter schools, and that's for the actual funding. As far as our technical assistance, we have it opened up to all schools across the state, so we do have private charter schools. We'll

provide technical assistance, again provide them funding, but we do provide technical assistance to them as well. Next slide please.

The best way to look at the EESI, as I said earlier, was in phases, and as 2008 was the creation by 2010 was what I call phase one, and this was the first – where the money started going out the door to the school districts, and they talked about a loan program but it wasn't getting much traction so they decided the best way to probably get the attention of the schools and with the Department of Education was to really roll out a grant program. And as I mentioned earlier as well, \$90 million was the original one-time allotment that we had received, and of that the council decided that \$20 million of that needed to go to prescriptive grants or to a grant program. In this case it was a prospective prescription grant program which we had allocated a certain dollar amount per student to the schools and they were able to go out and from a list of items, whether it was the heat pumps, if they wanted to do some lighting, do some control upgrades, we had a list of things that they could select from and we would pay a certain dollar amount for them to implement that in their school district.

So the results from that early program, out of the 144 school districts, 130 school districts did apply and receive funding and they totaled about \$16 million that went out the door for that program. One of the key partners is TVA, the Tennessee Valley Authority, and they provide a lot of engineering services to do pre and post measurement for us on all our projects, whether it's a grant or a loan, so we're able to do – at least get a snapshot of how well the project is working. So they did provide an additional \$2 million of incentives and another \$1.3 million of in-kind services, which was a pre and post measurement. After their measurements came in, the results of that were we saw about \$4 million a year in electric energy reduction throughout the 130 schools that participated.

So that was a great program and got \$16 million out the door. Next slide please. The second phase, which started around 2012, was the Energy Management Grant Program, and I think as we already heard benchmarking is key to any of these programs and that's one of the things that our council and our technical advisory committee realized as well. Really, if we're not measuring it how can we really manage what's going on as far as energy is concerned within the school district? So the Energy Management Grant Program was created, and with this program there was \$4.3 million of grants given out to districts and they had an option of developing – well, not the option – to establish an energy policy and also an ongoing

energy management program, and they could either do this themselves or they could hire an energy manager to really get the energy usage into portfolio manager.

As a result of this program the level one energy audits were completed for about 10 percent of those that participated of the total square footage, and the baseline energy data was entered into Energy Star Portfolio Manager, so that was a good thing. Today, there are some hurdles that we still have to overcome with that, but it was a great start utilizing our funding. Next slide please. Phase three, and this is more about when I came in to working with EESI, was the development of the loan program, and this is probably one of the best things that goes on as far as sustainability of a program. This is the key thing.

'Cause with grants you can give all your money away and then the program is done, but if you can really build up a model that is sustainable that's the best way to go, and with the council they were great at designing this program and it started off as a revolving low-interest loan which we loaned the money to the county on behalf of the school district. There wasn't much uptake at first. The interest rates were negotiable, but they still weren't getting as much uptake as they had planned, and so they put the money out at zero percent and that really piqued the interest of a lot of school districts and they started – the loans started coming in. Today we have an interest rate that's a little bit higher than zero percent, but it's typically one or two points below what the school district can go out on the bond market and get.

Typically we're at 1.5 to 2 percent, but overall most of our loans have gone out around 1 percent. The current program guidelines for the loan program is we will do some new construction. We won't build a building, but if they are building or have a new school building that they're building and choose to go for a high performance building standard we can cover some of the cost to help them achieve that high performance building standard. The majority of our projects are existing buildings and it's retrofitting the older buildings, so our maximum loan size is \$5 million and we do allow up to a 16-year term which is new in this past year.

Typically our loan term was around 12 years, but to really help some more school districts and with building controls and maintenance upgrades we did go ahead and decided – or the council decided to move that up to 16 years. Go ahead to the next slide please. So the value of EESI and the results of these programs, and as I said it's taken some time. It's our 11th year that

we're entering now. Once it's rolling it's amazing to watch and see what can happen with somebody and educating the school districts. So our total impacts to date from EESI, we've put over \$130 million directly into the school districts via our grants alone.

All interest from the loans have been sufficient to offset admin cost. That's one of the big things that we're talking to the general assembly. From the original \$90 million that we received not a single penny has been spent on administrative costs. We totally run the program in a sustainable fashion and just based off the interest that's collected on the loans. Total estimated energy savings to date, we're at \$64 million and that's – and for a loan program, \$111 million of that \$130 million has gone out the door. 13 loans have been repaid and our total outstanding loans are approximately \$58.6 million.

And as far as monthly repayments, for this fiscal year – or last fiscal year we were at \$687,000 and we're projecting right now for FY20 that our repayments will be a little over \$900,000 a month returning back into our program, going right back out the door to other projects, which we have about \$22 million of projects that are just pending and waiting the funding to come in to be implemented in their school districts. The biggest thing is there's been zero defaults, so that's one of the big takeaways that we have from the program. And with that, I think my time is up. There's a lot to cover here.

If you have any questions feel free to email me and I would love to talk to you more about our program and how you might implement it in your state. So, thank you very much.

Brooke Holleman: Alright. Thanks, Scott. We are running a tad behind but I want to quickly go to Trudy Trimbath and Poudre School District. Keep sending in your questions. We'll hopefully get to a few of them by the end of the hour is not slightly over. So, Trudy.

Trudy Trimbath: Hi. So go on ahead to the next slide. So I am Trudy Trimbath with Poudre School District, Energy and Sustainability Manager, and I just kind of wanted to talk about what it's like to really be part of a rural school. So this picture shows our three rural schools. In the lower left with the very pitched roof is Livermore. It was built in 1953, about three acres, 11,000 square feet. The top, the red one is Red Feather, built in 1985, 10 acres, 9,000 square feet. Stove Prairie is the last one – or actually, Stove Prairie is the one to the left that was built in 1896, and the one to the right was Livermore, built in 1953.

There are approximately 40 students per school and about 8 to 10 staff, and these schools serve grades pre-K to 5. So go on ahead to the next slide. Fort Collins is about 50 miles north of Denver. We have about 145,000 people. Next slide. We're kind of a last stop between Denver and the Wyoming border. Next slide. Our schools, we have about 54 schools.

We serve approximately 30,000 students, making us the ninth largest district in Colorado. And the key part is we cover over 1,800 square miles. We go all the way to the border, out to the Continental Divide. We have three mountain schools. I wanted to point out we cover eight cities and towns, which means three power providers, two different gas providers, and about eight water providers. Next slide.

About 4 million square feet of coverage. You can kind of see some other information about the district there. We'll go on to the next slide. As we mentioned, part of the Environment Leadership Program, part of ClimateWise. You can go to the next slide 'cause I'm gonna kind of skip over these. Part of the Green Ribbon Schools. Next slide. Energy Star. So we really are big on benchmarking. We've been doing Energy Star for many, many years.

We have 41 schools and one office building that received the award in '18/'19 when they redid how they calculate the Energy Star scores for schools. We did have some of our schools drop off, including our mountain schools because you do need a score of 75 or higher, and we do have the third party certification with a certified engineer. Next slide. This is our sustainability management system. We have five key topic areas that you can see listed there. We get a lot of department input and school input and we're currently in the process of revising our plan right now.

Next slide. So the pressing issues with mountain schools and how this impacts how do you do energy efficiency and when do you do renewables, you kind of need to understand what the issues are for these rural schools themselves. So security, emergency response, resources, building assistance, the environment and culture. Next slide. So from security and emergency response, the key thing – and this involves communication as well – you need to understand we are not somewhere between three and eight minutes from a fire department, a sheriff, a police officer. We're talking in some instances 30 to 90 minutes may be the response time to get folks up there.

These rural schools are supported from a fire standpoint by volunteer fire departments and all those people work, so their response time getting to the schools is pretty heavy. Cell service. On a good day it's there. On a bad day it's not. If your power goes down you lose your landlines. There are no redundant power sources. So we recently – we've had two fires in this area in the last month, and in the first one, one of the power poles, phone poles actually burnt, and so we had no redundant backup systems.

It's not like they switch to another substation. So we've had to create saferooms within the schools. We have emergency radios. We have one radio per school that actually will come down to our transportation department and then they can get ahold of the other facilities here within the district, and we have 20 generators that are 24 by 7 by 7. Next slide. So, resources. Like I said, the drivetime, even for technicians to get up there, can be tricky.

During the recent fire, the one road in and out to Livermore and Red Feather was cut off by the fire. Luckily, this time of year we can still get really creative in taking some back roads, but these are dirt roads, heavily rutted, you know, four-wheel drives only, so that can be an issue for us. Transportation. We actually stage our buses up there in case we need them. Challenges with vendors, getting vendors out for trash, recycling, providing water, even data are very limited because people don't want to go that far up, and you really have to communicate with them.

You know, if you know there's a storm coming in you're calling your propane provider and saying, "You better deliver today and top off the tanks 'cause you might not get back up there for a couple weeks." The teachers report difficulty with substitutes. Sometimes they just don't show. And then equity in programs as far as, you know, what kind of curriculum we're offering. A lot of the teachers have to wear multiple hats. Next slide.

So within the buildings themselves, none of our mountain schools have a cafeteria so the students are bringing in their own lunches, and that's something that we're gonna be working on over the next summer to try to get in some resources that meet local health department codes. In one of the communities, one of the restaurants up there will actually bring in hot food once a week for their students. We talked about the redundant power systems. We just recently got fiber, so we're just able now to get computers, building automation systems up there.

We do have rebates from all the utility providers, so we've done some things like energy-efficient boilers. We have done LED lighting. The community solar, we've had to resort to community solar versus onsite solar. If you saw from some of those pictures the woods – it's heavily wooded areas and that's to kind of protect the schools from the elements of the winter, and so trying to put solar in the buildings themselves or even in the land – because, you know, you have deer, elk, bears, mountain lions, rattlesnakes – even installing on-the-ground solar was a challenge for us. Next slide.

So we talked a lot about the environment. You can see there's very rugged terrain up there. It's kind of like it's sitting out there in the middle of nowhere and it pretty much is. It's hard to tell from that slide, but the mountain roads, so like I said, we really have to depend on, you know, the local community to help us. Go to the next slide. So when we talk culture, understand these schools are the center of each community, so you really have to work with the parents on what their priorities are.

These schools do get bond funding just like any other school in the district. A lot of it goes to things like having adequate driveways and parking lots. We've done roofing projects, the boiler projects, some lighting projects, replacing windows and doors. You know, these are basically kind of like modular buildings and they're very old, so you are somewhat limited in what you can do, and also because they serve a small amount of students you're somewhat limited. So parents fundraising, you know, they maybe can do one fundraiser a year where your municipal schools are doing four or five a year.

A lot of flexibility in being prepared. In the pictures on this slide, the top one that is downtown Red Feather. The two side ones is downtown Stove Prairie, and then the other one that has the gnomes on it is really understanding the culture. It's hard for these kids to do field trips like down to Denver just because of travel time, and so really working with the local community and their culture and understanding what their priorities are. This is called Gnome Lane and these students once a year, as part of their project learning, go and count the gnomes, try to figure out which ones have been added, which ones have been deleted, so it's just kind of a cute picture that really talks about what the local culture is and understanding how you have to be flexible with your policies.

You know, we may have a very strict municipal policy on releasing students, but in the mountains you really have to trust

that these parents know each other and are allowed to pick each other's kids up. Phone lines may not be existent depending on the conditions, so parents are driving house to house to notify other parents of a school closure, some of those issues. So, you know, renewable energy is not always the priority, but we found that with our local power provider for these rural schools, having the community solar program was very beneficial. And if you have any questions – next slide – here's my contact information. So that was really quick, but I was trying to get us caught up on time.

Brooke Holleman: No, that was great, Trudy. Thanks so much. There's a lot of considerations that go into serving those mountain schools and it's really exciting to hear about. I would love to go to Q&A for just a few minutes, try to get one or two in there. Yeah. So let's go to Karen. A question here for you. We had a question come in. On recognizing the top-performing schools and having participating schools receive resources and kits intended to incentivize participation, how well has this worked?

Karen Lasure: Okay. First, yes. Absolutely yes.

[Laughs]

Across the board. It also – and I can – it does several things. One, it gets the kids really involved, and kids – schools are very competitive by nature. So if one school is doing it and they hear about the other kids and they're like – you know, the next thing you know it's like our school has saved more energy, we're doing this, we're doing that, we want to do it too, but kids take it home. This component of the project is just now rolling out. So we started with collecting the data first and we're about halfway through the state on that.

So now we're – I'm starting to pull together everything that I need to roll the next portion of the this out, which is the education component, which will include WVU, it'll include ASHRAE, pulling in the Need Program and working with new partners, Marshall University. You know, you can never have enough partners. But yes, absolutely.

Brooke Holleman: Awesome. Yeah, thank you. That was great. We had a ton of questions roll in. Unfortunately, we're already over on time. So we would love to put together those questions on a document and share those with all of you when we share the webinar recording. So stay tuned. Feel free to get in a couple last questions for us to collect and we can go ahead and wrap up the next few slides here. I

want to go ahead and plug the Better Buildings webinar series that will be taking on some of our most pressing topics with new experts leading the conversation on improving best practices and cost-effective strategies, new ways to approach sustainability and energy performance.

There's a lot of webinars now through the spring of 2020 and several are listed here. I also hope you all will attend the next Better Buildings Webinar on Tuesday, November 12th, titled Rethinking Leasing: Spotlight on the 2019 Green Lease Leaders. The Green Lease Leaders program shines a spotlight on innovative landlord and tenant companies that add energy efficiency and sustainability clauses to their leases. Speakers will demonstrate how smart leases enable landlords and tenants to work together to keep costs down while ensuring energy efficiency and workplace comfort.

We are also pleased to announce the date for the 2020 Better Buildings Summit held out here in Arlington, Virginia June 8th through the 10th. Registration will open in January with an early bird special, so keep an eye out for more details. And with that, I would love to thank our panelists so much for taking the time to be with us today. I know we were a little bit crunched for time at the end but just a great panel of folks. Feel free to contact our presenters directly with additional questions and, like we said, we'll be following up with answers to all the questions you had coming in.

Apologies we went a little over. A special shout-out to our _____ partners and also the Better Buildings support team to make this happen. Please follow the Better Buildings Initiative on Twitter. If you'd like to learn more about the Better Buildings Challenge, please check out our website and keep an eye out for an email notice when the archive of this session is available online. Thank you, everyone.

[End of Audio]

Speaker Q&A

General Questions:

Audience Member: I am a student working with a community school district to find ways to reduce energy consumption. What are some suggestions you have (project wis to see the impact it could make)?

Karen Lasure: I'm not sure of the scope of project you're looking for... but if the idea is to involve students and faculty, the National Energy Education Development (NEED) program has a great [Energy Survey activity](#), which is free to download. If you have a couple principals and/or teachers that can help champion the project, their students can participate in investigating all aspects of their school's energy consumption by conducting a comprehensive energy audit and developing an energy conservation plan to implement.

Audience Member: Scientific American reported on results of a survey that showed parents' attitudes towards energy conservation were greatly influenced by their children. What, if anything, are the speakers doing to leverage the facility improvements to educate students, faculty, staff, and parents?

Karen Lasure: The K-12 component of the West Virginia Benchmarking Initiative is focused on just that... by providing education materials and curricula to participating schools, we are hoping to create a paradigm shift in how folks here view energy efficiency.

Questions for Karen Lasure:

Audience Member: When does the school obtain ownership of the system?

Karen Lasure: I'm assuming this question is regarding the data going in portfolio manager... the county school systems own their data from the start. We normally set the County Facility Director's up to own their data. My office has viewing access. 3 ASHRAE folks on the project are inputting the data into the database. A 40 yr PE ASHRAE Fellow and 2 college grads... all have signed NDA's.

Audience Member: Are recognizing the top performing schools and having participating schools receive resources and kits intended to incentivize participation? How well has this worked?

Karen Lasure: Yes!! Absolutely, this is the carrot that we hope gets other systems involved... when they see the adjacent county getting recognition.

We are just rolling this part of the project out. I've got counties identified that have completed the benchmarking process to receive kits and recognition. I will know more on how it's working next year.

Audience Member: Is this for all schools throughout the state or just state schools?

Karen Lasure: This is all public K-12 schools in West Virginia, all 55 counties. However, we will work with private schools if they contact me with interest and will include them in training opportunities. But the focus is on state funded schools.

Audience Member: What are some of the most effective strategies schools have tackled to reduce oil or electric usage?

Karen Lasure: In 2016, Berkeley County Schools, in WV, were looking at how to address issues in their buildings. Instead of continuing to fix the symptom, they decided to fix the cause by doing a 'deep dive' renovation of 35 buildings over 18-months. Funded by a performance contract, the project not only changed lights and plumbing fixtures, but installed new boilers and chillers in 5 schools, and 7 schools installed new geothermal HVAC systems. The guaranteed savings was \$1.7 million in 24 months. The project exceeded the guarantee by an addition \$1.3 million and 3 schools were recognized as the 1st perfect 100 Energy Star schools in West Virginia.

Questions for John Balfe:

Audience Member: What are some of the most effective strategies schools have tackled to reduce oil or electricity usage?

John Balfe: For existing school buildings—some of the most effective strategies include occupant engagement activities. These strategies can take many forms but at the core it's all about educating occupants (students/staff) about what they can do to reduce energy consumption. This can range from turning off lights when they're not in use to ensuring windows are open or closed in appropriate situations. Plug load strategies are also increasingly important as we plug-in more and more devices.

Audience Member: If schools are already built, what are some of the best projects to look into for reducing energy consumption?

- John Balfe:* Take a look at [NEEP's Operations and Maintenance Guide](#) for a comprehensive set of strategies that schools can take to reduce energy consumption in existing buildings.
- Audience Member:* Where can we access the simplified portfolio manager worksheet?
- John Balfe:* Please email me (jbalf@neep.org) if you are interested in accessing the worksheet.
- Audience Member:* Has anyone developed a simplified audit worksheet or process that would lie somewhere between portfolio manager and a Level 2 ASHRAE audit?
- John Balfe:* Something similar to what you are describing here is [DOE's Asset Scoring Tool](#).
- Audience Member:* Is the simplified worksheet for EPA benchmarking available on your website as well?
- John Balfe:* It is not currently available on the NEEP website. Please email me (jbalf@neep.org) if you are interested in accessing the worksheet.
- Audience Member:* I noted 80 new schools! What items are being "benchmarked"?
- John Balfe:* We are utilizing EPA's Portfolio Manager tool so the inputs include basic building characteristics, uses, and utility data. The outputs then include site and source EUI, GHG emissions, total energy consumption, etc. Checkout [EPA's website](#) for more info.
- Audience Member:* Does New Hampshire have "net metering" available?
- John Balfe:* Net-Metering is available for customers of certain utilities in NH. See the [PUC website](#) for more info.
- Audience Member:* Benchmarking NH slide 20: Benchmarking is stated as "new schools". Are you referring to newly built schools, or to schools which have been newly benchmarked?
- John Balfe:* Schools that are newly benchmarked.
- Audience Member:* Can you tell us more about what things are in the toolkit?
- John Balfe:* The toolkit is meant to provide guidance and resources for community level stakeholders so they understand the importance of high performance schools (HPS) and key steps along the way to ensure their goals are met. The toolkit will provide data on the

benefits of (HPS), guidance for setting project goals, selecting the right design team, stakeholder engagement best practices, and more. We are always interested in hearing what communities need—please let me know if there is something in particular that you think would be useful.

Audience Member: What are the gaps in what's needed as far as tools for districts?

John Balfe: Data—showing the impacts HPS are having in communities from health data to energy and cost savings data.

Questions for Scott Slusher:

Audience Member: How does the Tennessee group select auditors/esco providers (e.g., how to select good ones and allocate jobs to not favor one or two firms)?

Scott Slusher: In 2013 Tennessee enacted a law that allows Public school districts to follow a different contractor selection process than those that apply to other state and local agencies. If the district initiates an “energy related” project that requires both engineering and installation of equipment, they are able to avoid “bidding” the engineering and construction pieces separately. The districts send out a request for qualifications tailored to their specific project. The information provided by the contractors is evaluated and the district selects the company it fields is best qualified for the job. The district then negotiates a price that fits within their budget, and the project can begin. If no agreement on price is reached with the first selected company, the district can enter into negotiations with their second-best qualified vendor, and so on until an agreement can be reached.

Audience Member: For Scott talking about pre-determined payments for multiple energy efficiency measures—can we get a copy of that list? Do you know what was most commonly selected?

Scott Slusher: Lighting, Building Automation Systems (controls) and HVAC upgrades are always at the top of the list due to their rapid ROI.

Audience Member: Have you experienced any default on your loans? What safeguards are in place to protect this initial investment in your program?

Scott Slusher: There have been no defaults, nor have there been any repayment problems reported by our loan recipients. Our Technical Advisory Committee review of project applications is the key to assuring

that the estimated energy savings will materialize. Their review is rigorous and thorough.

Audience Member: When you select lighting for classrooms, what have you selected as best practices? To clarify, options include dimmable, dimmable + color temperature adjustment, dual technology occ sensors, etc.

Scott Slusher: LED Lighting is always our top recommendation. We also recommend daylight harvesting, occupancy sensors and dimming controls if they fit in the project budget.

We are also recommending and funding full spectrum lighting with remote controls for use in Special Needs Classrooms. The impact on those students is incredible!

Questions for Trudy Trimbath:

Audience member: I would like to hear about any energy efficiency projects that have worked very well at small/rural schools...and that could serve as blueprint projects for other schools.

Trudy Trimbath: Community solar projects through local utility power. These projects provide a decreased rate that is used to pay for solar. No upfront costs. No equipment to maintain or install.

Rebate programs through local utility providers. Paid for 75% of the cost of outdoor LED lighting.

Energy competitions – ReNew Our Schools and ENERGY STAR Portfolio Manager have templates. These are more focused on behavior changes, but they are very effective.

Smart power strips that are programmed for specific hours of the day.

Upgrade lighting to LED. Sometimes existing fixtures will work with LED lamps so the only cost is the lamps.

Occupancy sensors in restrooms and low use rooms such as teacher workrooms. They are low cost and relatively easy to install.

Delamping existing lighting as long as local codes for minimal lighting are still met.

Putting vending machines on timers so they do not run overnight or on weekends.