Eli Levine: Hey welcome everyone. We're just going to give everyone a few minutes to, ah, not a few minutes, a minute or two to get settled and get in and then we will kick off this webinar. So thank you so much for joining us today.

All right well welcome everyone. We're thrilled to have you joining us today for Webinar Number 11, the MEASUR Tool Suite. This promises to be a really good webinar that I think will be really useful for a lot of you who can join us today.

So next slide.

I am Eli Levine. You've seen my face before. Happy you could join us today and happy to turn it over to the next slide to talk about what we're going to feature today.

So before we get started this is what was going to be number 12, the Field Validation webinar is on hiatus for the moment, as we just wait for our stars to align to make the announcement there.

All of the other webinars that we've had so far are available for you to rewatch online, watch the recordings. So if you've missed and I've mentioned this before I'm very guilty of signing up for webinars and then missing the live webinar, but going back to watch it in the evening when my toddler is asleep. So if you missed any of these I encourage you to go back and watch them later.

We have one more scheduled for next week on process cooling. At that point we will have done a full dozen of them. This is a useful point that if you are enjoying these, if you want us to cover new topics or if you're sick of webinars and don't want to feel like you have to join us every Thursday please make your viewpoint heard. Let us know what topics we could still cover or if you think we should take a break, that we're all Zoomed out and webinared out tired of all of these remote calls during the pandemic living. But today's promises to be a really good one.

So next slide.

As we've done in the past we are going to be using Slido for answering your questions, as well as for a poll or two today to hear what you guys are up to, so please go to www.slido.com and then a #DOE to get to this webinar. Thank you so much.

Next slide.

The agenda for today we're going to give you an introduction to the MEASUR Tool Suite, we'll do a demo of the software that we have there and then we'll take some question and answers as to best showcasing you know how this can work for you and answer how this can directly fit your needs.

So with that next slide.

I have the pleasure of introducing Kristina Armstrong. Kristina is upping the ante a little bit and doing it live, so we are excited. No pressure Kristina, but Kristina has been with the ORNL team for a couple of years now. She came with a nice suite, a nice portfolio of companies that she works with and she provides engineering support to transition many of our legacy software tools to this modern open-source format that is the MEASUR Tool Suite. We're thrilled to have her and with that I will turn this over to – thrilled to have Kristina and with that I will turn this over to Kristina to get started.

Kristina Armstrong: Great, thanks Eli. So I will be talking about Using the MEASUR Tool Suite.

Next slide.

As Eli mentioned our Tool Suite we're working on is based on an older series of Tool Suites developed in the '90s and early '00s, using vendor or industry experts, but unfortunately most of those, nearly all, do not work on today's operating systems. So we wanted to continue the legacy of providing a technology and vendor agnostic tool suite for identifying energy savings and quantifying and validating any savings opportunities.

So next slide.

The modern tool is open source. You can view the entirety of the code at GitHub. It is free. You can download it at the link provided or honestly Google DOE MEASUR.

Open source means if you want to you can contribute to it, but all codes suggestions are approved by our internal team, so no one is going to be changing things willy-nilly, but you can either download the code and make it your own and have your own internal version or you can suggest changes or you can actually code-up the changes and send those to the team.

The tool will work on Windows, Mac, Linux, and we are working on an online version. It uses a common software engine library. So it's broken up into two pieces, one is the frontend that you see, the other is the map. We also have included automatic update notification, which is really important, because if you were to open it today you probably will get one, because we updated it yesterday.

And all of this is without the sacrifice of the original tools. We're still technology and vendor agnostic and we're still using the same, most of the same established algorithms developed with the experts.

Next slide.

So MEASUR. We will have six assessment types. We have five right now, pumps, fans, process heating, and steam, and a treasure hunt and we are working on compressed air. We have an inventory system, right now we have motors. This is a new feature as of yesterday. We are also planning for pumps, fans, compressed air, and a maintenance log. We also have over 50 standalone calculators for pumps, fans, heating, steam, compressed air, motors, lighting, CHP, and much, much more.

Next slide.

As I said you can download it via that website provided there or Google AMO Software Tools, DOE MEASUR, a lot of things will get you there.

Warning, as I kind of imply our tool is in beta, so we do updates fairly often. With the pandemic it's a little bit slower. You will get an automatic notification, which you can kind of see on that screen. It will provide you with release notes if you want to check and see what all we've done. Maybe what we've done recently doesn’t really affect anything you use and it's kind of a pain to get a new install in don't update yet.

If you do update there is no need to uninstall beforehand. In fact please don't, you will lose all of your assessments if you don't back them up.

Next slide.

And as I mentioned we welcome contributions. You can access the code at GitHub. We are working on including a new third-water

wastewater tool suite, called the "Bio-Tiger Model." We have also partnered with Tennessee Tech for a Capstone Project where they made MIMIR, which is a live, real-time sensor suite package that looks at pumps, sensors, and calculates in real time.

Again you can download the compiled tool suite at the AMO website. We welcome feedback. We have a SurveyMonkey survey up and we welcome any feedback you can provide.

Next slide.

So now we have some polls. If we can switch over to them and Eli I'll let you take over.

Eli Levine: Fantastic. So please use this time to go to www.slido.com. I'll give everyone a minute and then you put in #DOE. So the first question, the first vote is in, someone was very quick to say they have not used this, "Yes" is making a comeback. Let's see where it goes. We're up to seven votes, keep entering. This can help us better help Kristina tailor her presentation based on how familiar you are with MEASUR Tool Suite. Thirty-nine, 31, ooh 71, 29. Let's keep it going. We'll let a few more votes come in, 62, 37, keep going.

Let's get over 20 votes and then we can move forward. So if you haven't voted the 21 votes, all right keep going. I would like to get to 20, still saying close, 61, 39. So maybe see if we can get to 25 votes and then we'll turn it to the next, the next poll, but if not we will stop at 23 votes. All right we'll stop here, 61, 39, have not used MEASUR before.

Next poll.

So of those who have used MEASUR can you check all of the ones that you have used and this will help us understand which ones our partners are really seeking out to use. So please send in your votes now. If you have used MEASUR which modules, which industrial systems have you used so far?

Calculators is in the lead. None is a strong second. None is continuing to rise. Pumps and steam tying for second-to-last, nobody for fans just yet.

So Kristina your mission for today is to promote the fan systems and get people excited about what MEASUR can do for fans.

Give it another minute or two to see if anyone else wants to enter.

Okay next poll please. Calculators won the day.

I see Clifton chiming in on the Chat box with his 50 little jokes about there aren't any fans of the fans on MEASUR Tool Suite, that made me laugh Clifton.

Which modules do you think you might use? Enter any of the ones that you think you might use. Calculators this is a very strong "Yes." It's nice to see a few people picking fans there, that's a, that warms my heart. Twenty-two votes, I'll give everyone another minute or so if anyone else wants to enter. And with that my responsibilities for the webinar go back on hiatus as I turn this over to Kristina. Thanks so much.

Kristina Armstrong: Okay so now we're going to start our demo. So I guess I need control? All right hopefully you can see my second screen with MEASUR on it. Please let me know in the Chat box anyone if, if you're just seeing my face again.

Eli Levine: It looks good, I can your face and the screen.

Kristina Armstrong: Okay. So this is MEASUR's homepage. This is where you start everything. I'm actually going to take us down here to Settings first. So Settings is where you can do a lot of general setup. If you want you can translate the entirety of the tool. To use this you have to be online and it's a bit of a pain, but it's better than trying to understand the language you don't speak.

You can change the units of measure or the unit system for all the calculators will change right away and anytime you start a new assessment it will be in use units, it will not change anything you've already done.

This will make more sense as we get in, but there is a tab on the right which shows either Results or Help and this just lets you choose which one you're going to look at by default.

It also lets you put in universal costs for things. So if you have a electricity, you're only using one plant it's always going to be this one cost, you can just put that in right there and never have to worry about a field for electricity costs again.

You can also do a lot of settings for the individual assessments, setting units and whatnot a bit more specifically. So in steam if you

know you're use imperial for almost everything except power you want in megajoules per hour you can do that.

We also have tutorials that will popup as you run through the tool and here's where you can just move them all over to hide or put them back on show.

And lastly, the big red button down here will clear your data. Be very weary of the big red button. It is sometimes very useful, but there's a reason it's red.

Also down here we have feedback. So like I mentioned we have a survey and this is one way that you can access it. Unfortunately, our tool is in beta, we can have problems. If you encounter a bug or would otherwise like to provide feedback you can e-mail me and my e-mail address will be provided at the end of the webinar or you can e-mail Jenna O'Kelly our head programmer. Please include information like your operating system, screenshots are great and you can download your entire dataset and that will really help us identify where the problem is. This is also good at just creating a backup of everything you have.

And last as I mentioned we have Release Notes, so this will let you know every little thing we've done since the last time we updated it.

All right so back Home. Actually using MEASUR. As a lot of you are interested here's how you can access the calculators or a long through here we have over 50. It's going to take me a minute to scroll all through them. From most of the major equipment systems and then a lot of just kind of general ones or generic, including a psychometric calculator or just some things that are used from the Treasure Hunt Tool Kit.

If you want to start a motor inventory you can do that right here. You can also do that in the dashboard which I'm going to show in a minute.

Then creating in assessments you can do so by any of these links. This button here, this button here, or again also in the dashboard. The dashboard is where you can see all the assessments you have made thus far and organize them. You can also export, which is kind of the equivalent of saving externally to the tool and allow you to send it, e-mail it.

You can also import. Now these files are all .json files, which basically means they're a text file. And it's that easy.

You can also let's see, you can rename, you can delete, you can create copies. And we like to encourage our users to treat their folders system in MEASUR like it's a facility. So put all of your assessments for a facility or maybe a department in a folder together and that way you can put in some plant info that tags along in any reports you generate. You can edit this info, so put in phone numbers, e-mail addresses.

You can say for this folder since this is my facility in Oakridge, Tennessee it has this electrify cost and all new assessments will use this electricity cost.

It also gives you a nice quick little heads-up of what exactly you've done so far. So for pumps you've calculated this much annual energy use and you've done modifications suggesting this much – or you've done this much energy cost, it; it relates to that much energy cost.

Also in your dashboard you can generate reports of all these assessments. This takes a minute, but this will help you look at everything all together. You can choose which of your modifications you want to look at. You can print this report and you can also look at a roll-up for any of the individual systems. It just gives you quick little graphs letting you know how many pumps, how much energy they use.

In this printed report looks like this. So this particular one is nearly 90 pages because it also includes the individual equipment reports for each piece of equipment that is in there.

So now that I've shown you the end let's look at actually creating an assessment.

So you do that here. Name it something unique. Specify what type of assessment you want and where you want to put it. So you can put it in any folder you've already created or you can make a new folder explicitly for this. We only have an hour I don't want to take the time to actually make a new assessment so we're going to just jump into one I've already made.

Now we're in an assessment so at this point you can change your units to for example metric and it will actually recalculate all of the fields you have entered. It's not very impressive for pumps because

there's not a lot there that changes, but so for example you enter data about the fluid you're pumping, what kind of pump it is, what it's speed is, what drive type connects it to its motor. Speaking of then you enter information about the motor. This is all just nameplate data and then throughout MEASUR we often have these little calculators like this. Maybe full-load amps isn't on your nameplate or it's kind of obscure, nobody remembers it. You can click this button and it will estimate your full-load amps based on curves that in the background. This is the same setup that used in PSAT.

Last you have Field Data, things like your flow rate, your head, the actual motor power that's used. Then it calculates pump efficiency, motor and shaft power, power factor. This pump is obviously quite overloaded. Then your annual cost. So that's setting up your equipment.

Next we have the assessment, the fun part. This is where you get to play around and say, "Okay well what if…" And you can do things. In this case you can say, "Hey, I found a pump that's the same type, it's 90 percent efficient. How much energy will that save?" "What if I bump my motor class up to premium efficiency and I installed a direct drive for my motor?" You can say and see in this case it's going to save you quite a bit. You can also change things like the flow rate and head if you want to start modeling throttling or using a VFD or such.

This is the novice use. This is just a couple of quick, little, little common things that you could change to improve your system. You can also go through the expert view where you have nearly identical fields as the baseline and you just you have to know what you need to tweak to get what you want.

Next interesting thing is our reports. So in the assessment you get this report that lets you look at each of the different modifications, compare them across each other, all those different results that you saw. Then also tells you the payback in months and what areas you clicked on to make these assessments. So in this case in the Novice view said, "Install a more efficient drive, install a more efficient pump, and install a more efficient motor." And we changed things on these tabs. So it just lets you know quickly what you did without having to look at the inputs.

We also like graphs. So we gave you a lot of graphs. You can say, "I want to look at the different modifications." Or you can even compare just two modifications. I don't know why the pie charts

disappeared. We like thank you diagrams just letting you know where things got lost along the way.

Also just real quick input summary, if you just want to be able to look the blue colors mean it's different from the baseline.

Then the facility info that you put in the folder is also ported over here and that's mostly for when you print. So again you can hit Print here and it will get a very similar-looking report. So you have the facility information, the input, and then the results and also those graphs.

With all the graphs in MEASUR you don't have to take a screenshot, you can just click this little button here and it will download your graph as a PNG.

So next I'm actually going to hop into the Treasure Hunt, because that is a bit more useful to a lot of people. It starts off very similar, most of our assessments start off with a page like looks this. Then you tell it how much of each utility you use for and its unit cost. So for example electricity has a cost of five cents per kilowatt-hour. They use this much consumption and it coats this much. Now you find Treasure.

So finding Treasure is a collection of little calculators that just help you figure out some opportunities that are found in Treasure Hunts. So lighting replacement are very easy to grasp one, upgrading your motor drive. Something like electricity reduction it doesn’t tell you how to reduce the electricity, it doesn't tell you what to do, it just says, "Hey you know what this is what we have now, this is what I think we could have." Then it calculates the annual cost of that, baseline annual cost of that modification and the savings.

So then you hit this little Save icon up here, give it a new name. You say, "Okay this one it was a motor" or you used one of the other systems we have. Treasure Hunts if you watch Walt's presentation they are mildly competitive so you can put your team here and who's going own this project. You put a brief description of what the opportunity is and just notes generally about what you think needs to happen. Energy use that's filled out by the calculator. Then you say, "Okay I think it's going to cost this much engineer's time, this much actual raw materials, this much in labor." You can add additional costs. You can add additional savings. We have one-time savings like a rebate or additional savings due to lower maintenance costs.

So once you have enough treasure you can go to your Treasure Chest and look at it all. You can see in this example we have a whole bunch already in here. You can say, "I want to look at just all the electrify ones" and note on the side it changes the rollup.

Now often with this it's when people are conducting a treasure hunt people will probably, each team will have its own laptop that they're doing this on. So then you can export and then import just the opportunities. These look the same as the overall assessment exports, but they are – they read differently, so what your naming. So now we're going to import the facility team's treasure hunt and now we have a lot more, because we have now three teams, instead of just the two.

You can sort, you can filter. There are additional filters when you look at each team or just maybe the different equipment. Then again as usual we have a report. And so it's just quick, total savings, total cost, total payback; broken down by utility, broken down by team, a quick copyable table so you can port it into your own Excel documents.

Payback, we have a lot of treasure hunts. You get little, quick payback opportunities and you can show these with these nice graphs, just letting you know current costs, projected costs. And for all the graphs you can just say, "I want to look at just the electricity ones."

All right I'm talking really fast so we are at 1:30. I now am going to move onto the inventory. So this is our new feature from, released today. Basically you set up your facility same way as usual, check what units you want to use, put in your cost. Here you setup different departments. It just makes it a little easier to filter out your motors later.

Now here's a list of every possible field that you could put in your database. You can say, "You know what I don't want to see whether or not we have a data logger," "I don't care about torque," so you can just just uncheck any of these and they will not be seen in your catalogue.

So finally the catalogue, where you do the data entry for your motors. So in this case we have a small paint mixer. You say what is does, it mixes paint. Efficiency class, efficiency.

But say you don't know these when you start, when you add a new motor. Well you can go to our generic motor list and you say, "Well I know it's this type of motor and I know it's premium efficient motor, ____ in the US, so it's 60 Hertz and you know what this one looks close to my motor." There we go. So now we've added this tiny motor.

A few of the really important fields are already filled in for you. Nominal efficiency, this is just the NEMA efficiency for that motor type, so you might want to look.

A lot of these you can actually calculate assuming you have enough information to do so. So right now we don't. And what do we need? Well we probably need rated voltage. That's not quite enough. So, oh, it will tell you over here you need nominal efficiency, full-load speed, _____ rate of speed. Well they're in here somewhere, there it is, I'm sorry. There we go. And now we can start estimating using all these little buttons.

So now you have the new motor. You can delete motors. Then you see we have three different departments for several motors. So now you can look at the summary. Again we have graphs and tables for you just letting you know the dryer blower that's using most of your electricity right there. I'm looking at each department.

Then finally we have the batch analysis, where it's looking at replaced rewind. It calculates – you have to put in a lot of information in the database, but it helps you calculate the current costs, how much energy it costs if you were to replace the motor, how much if you were to rewind it. Then it compares the payback for all of those and gives you a recommendation. Just very simple payback of if you should replace now, replace the motor fails, or just rewind when the motor fails. It will also let you know what motors you're missing data for and tell you what you need to put in.

So that's the motor inventory.

Now finally our last new feature is Data Exploration. This is useful for if you are getting ready to do an Air Master assessment. I cleared my… I knew I was going to screw something up for this today. Please give me a moment while I find my data. I'll start with a very simple one, hopefully this works.

So this is just a very simple time versus pressure for a compressed air unit. The next thing you do is you clean the data, so basically

say…you pick out which one is the date and then you say, "Okay we're going to rename this one." You don't need a lot of data cleaning to be able to use this, but you can't use a raw sensor file. You'll have to at least get rid of that header information at the top where it tells you the make, model, all that stuff. But then once it's just kind of a normal set of columns that are named then you don't need to do much else.

You can also specify what the units are. This isn't incredibly important right now, but it could be later. We hope to add more functionality.

All right so submit. Now it's cleaning up all that data and getting things ready, calculating averages. So we've got a dataset with almost 350,000 data points in it, which is why this takes a little while. So now it's calculating day types and if you have used Air Master you know what this is, but otherwise it's the hourly averages for a 24-hour period for a specific type of day, so weekend, weekday or you can setup your own, maybe Thursdays are special.

So now you get graphs that look like this. It automatically will say any date that doesn't have a full 24 hours is excluded. It will separate out between weekdays and weekends. Like I said you can add new ones because maybe Thursdays are special. You submit and now you can go through and change this to be a Thursday. You can see the graph up here also reflecting this.

Now if you're going to get ready to add this into Air Master you're going to want these tables. So this just gives you another way to look at it, overall the day, the average through the 24-hour periods. Then this would be what you add to Air Master. So it's the pressure for a weekday, hour zero is 82.

We also have data visualization, which lets you make scatter plots and histograms. So real quick we will make a time series. You can edit the axis labels. See if it goes. Again it's working with 350,000 data points so give it a minute. Then you can add annotations. So what's going on here? So you can just see if – it will add a little note to your data point. There we go…which you can move around using these arrows. You can also zoom in on these graphs by click and dragging once it finishes moving the data point. Like the rest of the tool there's always little help functions for you to if you want to know more about what's going on.

So like I said we want to zoom in just click and drag, click and drag. I just want to look at this six-hour period right here and now you can zoom in.

You add more graphs up here and it will save them until you clear out your data or otherwise clear your hold data of your tool.

Last I'm going to go back to the calculators. We have a lot of really nifty calculators, some of which we are just starting. Like process cooling is pretty new, we only have one calculator there so far. The pump curve can be really useful if you want to figure out the head and flow of changing your speed or an impeller size.

Fan calculators, since Eli wanted me to push fans a bit, the most useful thing I think here is the fan traverse analysis, which will help you with your traverse. Each of our calculators have a built-in example or you can just clear out the calculator. At the fan traverse lets you take all of your traverse whole intersections and does all the math for you so you end up with some really nice results telling you your total pressure, your static pressure, your efficiencies.

Let's see other fun calculators. If you have processed heating and you want to know the impact of maybe increasing your oxygen in your combustion air or changing your flue gas temperature this helps you just visualize that real quick without have you do a full process heating assessment. Similarly, with steam, you don't want to do a full assessment, but you just need to know how much energy you lose out of the stack of your boiler, we have a calculator for that.

You don't want to go to your thermo book and lookup steam properties, we have a calculator for that. This would have saved me a lot of time in my thermo classes.

Compressed air we don't have a full assessment for that yet, but we do have a gaggle of calculators. Simple things from converting from actual to standard air flow, receiver tank sizing, figuring out how much air is in your system, the velocity in the pipes. And also an air leak survey. This is also in the Treasure Hunt. So if you do an air leak survey and you want to keep track of that somewhere this is a good place to do so.

As I mentioned we have a lighting calculator and lots of general calculators. You want to figure out how much CO2 and what these energy savings would relate to we have a calculator for that.

It didn't come up as much in today's assessment because I didn't – or today's webinar because I didn't do a process heating assessment, but we have a lot of built-in fuels and charge materials and that sort of thing. So you don't have to go look up the thermodynamic properties of said materials, but maybe something you have it isn't in that list. You can very easily add a custom fuel. Add your own special blend of natural gas, you can say, "Well you don't have my specific heating material I'm heating up in here, but I do know which properties," you can add that.

Then this is just where it stores all that and lets you look at it and lets you send it to other people.

Well I think I actually managed to run through everything on schedule. So if we want to get us back to Eli who can start answering any or start giving me any questions that we might have.

Eli Levine: Sorry, I'm muted. Sure, happy to do so. So as your, as your, as I'm going through the questions we have I encourage everyone to go to www.slido.com, you've been there already and it's #DOE and you can input your questions.

So Kristina some of the questions we've gotten so far for… I'll, you know the nice thing about the slido app is you can have up-voting, so Paul's question has gotten two votes all ready, so we'll let that go first.

On inventories can you have a mixture of electric and fuel-driven equipment types that add to the total facility site energy consumption? This could count as the energy review of the ISO 50,000 watts.

Kristina Armstrong: Right now in our inventories we only have motors. We are planning pumps and fans and compressors. I think we could include fuel-driven equipment if there is a call for that.

Eli Levine: Awesome, okay that's super helpful. Well thank you Paul. Hope you are doing well. We will take that under advisement.

Two questions that are similar for this, is there a written manual for this tool or are there tutorials available for this tool?

Kristina Armstrong: I am in the very slow process of writing a manual for the tool as far as what the algorithms are. On the webpage there is a basic tutorial on how to use it. It has not been updated in a while. But I think we will also be attaching my extended slide deck to this presentation

online and there is a presentation style manual I keep updated with our major expansions that kind of functions as our written manual, it also similarly functions as the tutorial for it.

Eli Levine: Thanks Kristina. This is helpful feedback for us too because I think that hearing from partners and hearing that there's an interest in these types of tutorials can inspire us to go out and create something like this. Hopefully by recording, by recording this and having it as a resource or by you, all of the technical account managers are trained on the MEASUR Tool or Kristina is only a phone call away, so should you want more of an in-depth tutorial catered to your sites we're happy to do that with you for Better Plants partners.

Kristina Armstrong: Yes, please, please just ask your TM and we can work something out.

Eli Levine: Another question we go is: Does the compressed air tank receiver tool apply to primary and secondary storage?

Kristina Armstrong: Um, I do not know. I am not a compressed air person so the receiver tanks sizing it looks like it's only primary I think. But I think –

Eli Levine: Kristina the peanut gallery in our chat here is chiming in saying, "Yes it does."

Kristina Armstrong: Okay, yes it does.

Eli Levine: Will this tool take into account the interactions between measures if there is more than one measure for a given system?

Kristina Armstrong: Yes it absolutely will. It won't – what it will – what you do is when you make a modification you can put anything you want in there and it will calculate it on mass. So if you do one modification at a time you'll just be looking at the effect of that modification. But if you do a modification that is all opportunities you can see it best in the process heating example. If you were to open MEASUR and look at that one you would see there are four individual opportunities and then one opportunity that has everything and the kitchen sink thrown in. It has the savings for doing all of them at once.

Eli Levine: Great. I'll field the question or two. Will you bring back the Qualified Specialist Certification? There are no immediate plans at the moment to do that. Some of that is based on congressional

direction, so we will wait and see what our our appropriations and what congress says in terms of whether we bring that back. We try to be responsive to our appropriators.

Can I use this for calculating chiller and HVAC-related opportunities?

Kristina Armstrong: We are working on it.

Eli Levine: Okay.

Kristina Armstrong: Right now we only have the one cooling and that's the cooling tower makeup calculator. We have developed a whole suite of process cooling, we just don't have the manpower to get them implemented right now.

Eli Levine: Great. Kristina only a couple more. Does DOE offer more in-depth training or workshops on utilizing the tool in facilities?

Kristina Armstrong: I know that for some of our systems we are planning on workshop tutorials on how to use them and then several of the In-Plant trainings have started using them. Like the Treasure Hunt In-Plant training exclusively uses MEASUR and any little side calculators that might be necessary, but we are working on it I know for process heating and compressed air.

Eli Levine: Great, thank you. Is there a module to evaluate how these measures are doings based on M&V data from the field?

Kristina Armstrong: I will accept any help from the peanut gallery on this one. I'm not very familiar with what M&V data actually looks like, but I would think that you could use it to as the modification and compare the two.

Eli Levine: Okay, great. Well as we, yes, measure and verification, about Measurement & Validation is what –

Kristina Armstrong: Yeah, I don't know explicitly what the actual data would be. The peanut gallery says it can be used for some basic M&V using sensor data.

Eli Levine: And then last question Kristina and thank you so much for taking the time to work with us today. For everyone who joined us thank you for being part of this. As I mentioned before should you want to have a more in-depth or you know more time to really work with us one-on-one on how you utilize the MEASUR Tool for your

plants please contact your TM or contact myself. We'll have Kristina and I's information at the end of this, but we're happy to work with you on a more personalized basis. We're really excited about the MEASUR Tool Suite and we think that it could be really useful for our partners.

So last question: If I enter, if I entered projects and data where is it stored for me to come back later and how can I also save it for later if I need to recover it in the future?

Kristina Armstrong: So if I were to close MEASUR right now all of the assessments that are in my sidebar will still be here when I, when I return. It is stored in your app data. I don't recommend going to find it, but it is stored there. It will always come back when you close and reopen the tool. If you want to back it up my suggestion would be exporting it from the dashboard. I keep thinking I'm sharing my screen. But go to the dashboard, select all of your assessments and just export it and then you can save that .json wherever you feel comfortable saving it.

Eli Levine: Wonderful. Well thank you so much Kristina. This was a really great way to spend an hour with us today. So with that Nina could we move to our just final slides about the upcoming…

Oh I guess the last question: Is my data secure in the tool? Can DOE see any of it?

Kristina Armstrong: DOE well no, right now it is, it exists solely on your computer. No one will see it unless you explicitly send it to them. That will be true even when we do get it online, which is not yet. If you were to send it to us for a bug report even then it would still only be our team that sees it and we're not going to do anything with it, other than just look for the bug. But DOE can only see it if you send it to them.

Eli Levine: Wonderful, thanks so much Kristina. Okay Nina so let's move to the final couple of slides just to talk everyone through how to contact us and what the schedule is upcoming.

So great as I, as you can see here we encourage everyone to spend some time on our Better Buildings Solution Center. This is the Better Plants website. You can see the mouse moving over to our, to our technology focused areas and these have all of our various tools and resources for all the different technical areas you might be interested in. It's a really great resource. I encourage people to spend more time on our Better Buildings Solution Center.

Next slide please. I know the mouse is moving.

Okay so these are some of the webinars we've had already. We have one more upcoming on first of October, on process cooling, so I hope you will join us for that.

Should you want us to do any more webinars, if there's any topics we're missing or if there's areas that we should cover please do let us know and we're happy to keep this going.

Next slide.

So this is our information, as well as how to follow us. So please feel free to reach out to myself, Kristina, or anyone here with any questions you have or any feedback you have on how we can make these webinars even better.

So thank you so much. This was really wonderful. I appreciate all of your active participation through the polls and the questions and I hope you all have a great rest of your day. Thank you very much.

[End of Audio]