Andrew Schulte: All right. Thanks for waiting a few extra minutes. We anticipate having a number of people on this call and wanted to give it a few minutes to just get a critical mass online. My name is Andrew Schulte and I am a contractor providing support to the existing commercial buildings working group of the state and local energy efficiency action network, or as we'll call it SEE Action.

So I'm going to be serving as the host for today's session, and as such I'd like to welcome you all to the third is a series of webinars that are being coordinated by DOE's Technical Assistance Program, or TAP, and the SEE Action network. This series is an opportunity for state and local officials to learn about the energy efficiency strategy and policies that SEE Action is working with state and local governments to deploy, as well as the resources that are available to you to pursue these strategies.

Today's session is on energy audit and retro commissioning policies for public and commercial buildings. And we're very excited to offer you a great lineup of speakers. First, just a few quick housekeeping items. As you probably noticed all of you are on mute. Because of the number of attendees joining us today, we want to avoid any background noise. So we're not going to open up the lines, but if you have any questions as we go through the presentation, please submit them via the Q&A box – or it's called the Questions box – with you should see in the webinar panel.

We'll try to get to these questions as they come in. If we can't get to them right away, we can push them to the end where we anticipate a bit of time for Q&A. And if for some reason we don't get to your question today, we'll definitely follow up with you offline. Just to make you aware, we are recording this session and we'll also be making slides available to all of you afterwards.

So before we jump into the main content of the presentation, I wanted to give you a quick review of DOE's Technical Assistance Program, which is acting as a co-sponsor of the series. The Technical Assistance Program, or TAP, provides states, local and tribal officials with the tools and resources needed to implement successful and sustainable clean energy programs. These resources include one-on-one assistance, and extensive online resource library and the facilitation of peer exchange, which can include webcasts like the one you're attending today.

As many of you know, DOE is currently working to define the most effective framework for TAP in a post-recovery act setting. During this time, however, DOE is continuing to facilitate peer

exchange efforts and definitely encourages you to get involved and to learn more via the peer exchange hub. The URL for this hub is on the screen. Of course we definitely encourage you to stay tuned for upcoming announcements regarding further webcasts in this series as well as for more information about the availability of direct technical assistance and other resources.

As I mentioned, today's webcast will be made available online at the DOE Solutions Center, and that's gonna include the slides, the recording of the presentation and an audio transcript. And if you have any questions for the technical assistance program in the meantime, you are certainly encouraged to send an email to the address listed on the screen. With that, I'd like to say thanks again to everybody for joining us today and we're gonna go ahead and jump into the main content for this presentation.

To help us get started, I'm going to turn things over to Carolyn Sarno of the Northeast Energy Efficiency Partnerships high performance building team. Carolyn is also a member of the SEE Action Commercial Buildings Working Group, and so she's going to provide an introduction to SEE Action as well as an overview of audit and retro commissioning to frame today's presentation. As I mentioned, Carolyn manages NEEP's high performance building team. She assists states with the development and implementation of a strategy for building energy codes and code-related public policies to advance energy efficiency throughout the northeast and the mid-Atlantic.

Carolyn is a certified building operator with over 11 years of hands-on facilities management experience and she's also vice chairman of the Collaborative for High Performance Schools board of directors. So with that I'm gonna turn things over to Carolyn and Carolyn, thank you.

Carolyn Sarno: Thank you very much, Andrew. Thanks for that introduction and welcome everybody. We're very excited to have you take part in the SEE Action existing buildings commercial – the existing commercial buildings work group webinar on energy audit and retro commissioning policies. So, if you want to move to the next slide, and while Andrew moves to that slide, a word about NEEP. We are one of six regional energy efficiency organizations across the country and we're working to accelerate efficient use of energy in the northeast and the mid-Atlantic, which is where I'm located – in Lexington, Mass.

So as Andrew mentioned, I'm just going to give a brief overview of what SEE Action is and kind of set the framing – or the groundwork for retro commissioning and audit policies. Then you're gonna hear two really great examples from Scott Jarman from Austin, Texas' Austin Energy and Hilary Beber from the New York City Mayor's office. They'll both give local examples about what they've done within their jurisdictions to implement retro commissioning and audit policies. Then we'll wrap things up with a very brief, quick overview of DOE-related initiatives to help you with your energy efficiency policies. And also, we'll of course leave plenty of time for discussion and questions.

Next slide. One more. Thank you. So SEE Action, what is SEE Action? It's the state and local Energy and Efficiency Action Network, so we call it SEE Action for short. It's really an effort that's facilitated by the federal government, but specifically the Department of Energy and the Environmental Protection agency. Those two groups got together and are working on developing the different working groups that measure new policies that I'll be reviewing momentarily. So SEE Action is an effort that is – was built towards job growth and energy savings and that was made through the American Reinvestment and Recovery Act.

It's intended to help move the country from one-time stimulus to sustainable policies. We all know that ARRA has gone – we call it a bygone ARRA or ARRA go bye-bye, but it's not longer there. How can we learn from the lessons that have been imparted by several jurisdictions and corporations by using stimulus dollars to move forward for a longer term and an energy efficient economy? So what SEE Action aims to do is to help state and local governments in advancing energy efficiency policies that will help grow the energy efficiency sector.

We're working to remove barriers and give incentives to realize energy savings, and then growing state and local investments and cost-effective energy efficiency. Next slide. So this next slide gives you a very brief overview. We are but one group. There's an executive group that actually has 30 stakeholders on it, but within the larger working group – as you see on here on the screen – there are eight working groups that are all helping SEE Action achieve their goal of capturing all cost-effective energy and efficiency by 2020.

So while I also sit on the commercial building working group – the existing commercial buildings working group – I also sit on the building energy codes working group and there are a number of

different folks who sit on a couple different working groups. So we're specifically talking about existing commercial buildings today, but those other topics that you see, they're highlighted up there – residential buildings retro fit or financing solutions – we highly recommend that you go to the SEE Action website and the link is at the bottom of the screen and you'll see it again at the end of the presentation to access more information about the other groups, because they're really – they all - these recommendations were not created in a silo.

They have interconnected goals that were created in tandem of all the eight working groups working together. The next slide. So the commercial working group was looking at really what our motivation and we all got together with a group of individual stakeholders to figure out what are we gonna do to drive forward? And knowing that, and not looking at new construction because the majority of office space has been built – has already been built – is that we're looking at existing buildings and retrofitting the buildings that we currently have in our existing building stock.

You've all probably seen the stats that are on there now, but 50 percent of our energy use comes from commercial buildings, 20 percent of greenhouse gas emissions. So we wanted to be able to take that information and see how we could really drive demand for energy efficiency and to set realistic policies and help state municipalities and commercial building owners drive more towards energy efficiency. So our focus really was on ways to manage energy costs and then ways that could be measured that would allow for decision making.

I'm gonna show you in a moment just the framing – what some of those decision-making policies could be. But by making energy performance measurable and viable, local governments can encourage building owners to prove that their energy efficiency of their buildings, which can drive new investment and create and estimate of five to 16 greener jobs per $1 million that's invested. So I'm going to move to the next slide. These are a number of the different programs or policies that were developed that were identified by the working group.

You will see that there are four that are highlighted on the screen now: benchmarking radiant disclosure, retro-commissioning, which we're talking about today, strategic energy management and high-performance leasing. Those were the four that the working group targeted as the current focus that had – that needed to be – that had the larger return when it came to energy efficiency and

establishing policy. So certainly the other items that are up on the screen are of importance, especially for me. I'm a – I call myself a reformed facilities manager. I think education and building the workforce certification is critically important, but they're all tied to interconnected policies that are important. But we're focusing on the four that you see on the screen today.

Next slide. The commercial building working group has several resources that are available to you in any of the topic areas – on some of the topic areas that were on the slide previously. There are several fact sheets that working group members have established, and these are not just folks from the Department of Energy or regional energy efficiency groups like myself. There are folks who come from the private sector, the public sector, building owners, managers, etc. So we call got together and are helping to develop different fact sheets that will help you in guiding your decision making on establishing various policies and programs.

There are model design guides that are currently available on benchmarking, exposure, and then as you've noted now there's retro commissioning, which is currently under development. And then important to note is the last bullet there, which is the expert/peer support, that as I said, the working group is really a hybrid of individuals that are actually out in the field developing and implementing policies. And if you don't work in a silo and if you're – you try to figure out how you implement such a policy or if you want to know more, to definitely get in touch with Cody Taylor at DOE or Andrew and we can put you in touch with one of the folks that is part of the working group. Next slide.

So the last one is just wrapping up about the SEE Action network is how state governments – how you can get involved. We obviously want you to download the resources. We want to know if there's a resource that's not available, that we haven't developed yet or is in the works, what else do you need. And then most importantly it's to tell your story. I think a lot of times we develop various policies but then we don't tell about the great success of that policy and what are lesson are. So if you have a great story to tell about how you've made one of your buildings energy efficient, contact Cody Taylor. He's love to hear your story so that we can share it with others, or perhaps one day you too can take part in one of these webinars.

Next slide. Okay, we want to go one more. One more, sorry. I threw a profile in there that was a little action slide. So today's topic is representing framing that you're going to hear more about

from both Hilary and Scott, are about energy audits and retro commissioning. If you want to flip to the next slide, thank you. So energy audits and thinking about why is it important to do an energy audit. I'm sure many of you have heard the phrase, "You can't manage what you haven't measured." It's important to get an accurate view of the energy use within your building.

So energy audits are comprehensive, integrated solutions that leverage all available energy efficiency opportunities. An audit really evaluates the consumption of all fuels in all aspects of your building operation, from HVAC to lighting. Then it will take into account what you can do to make different recommended improvements on your building. It's really to have something that we see as the foundation for building your energy policy by benchmarking your building.

Just something of note, that there's a variety of different energy audits that can be done. You can do an ASHRAE level one, which is just a quick analysis of your utility bills and a walk-through survey, but it usually doesn't include anything from life cycle cost analysis, which is really important so that you figure out what you're assessment is going to be. And then also the next step would be a level two energy audit, which is a more detailed analysis of your utility bills and will include – or should include your recommendations on implementing cost savings and life cycle cost analysis.

So what we really want you to do is start with a foundation and have an energy audit of your building and make sure that you can understand what the energy use is and what direction you should be having. And also note that this isn't a one-time thing. This is something that you should do to help track your progress to know where your building is trending when it comes to its energy use. And don't just do it as one department. You want to make sure that you're involving all stakeholders. It sounds silly to write facility staff in there, but a lot of times facility staff have no idea what the energy use of their building is. They often don't see utility bills. But most important is to include utility administrators where applicable in your state.

They often have low to no-cost energy audits that they'll be able to do and then sharing the information with occupants so that they understand their involvement of the overall energy use. Next slide. Thanks. So the next step from that is once you have established your energy audit, what you're going to do is to look at something called retro commissioning, which is sometimes also called

recomissioning of your building system. It's a tune-up, is the simplest way to look at it, for your building. We tune up our cars, but we never tune up our buildings. So we just tend to think it's been constructed and I'm going to leave it that way and hopefully do some operations and maintenance along the way. And if you're lucky some preventative maintenance, which often doesn't happen because there's a mentality of if it's not broken, why fix it.

So a tune-up will actually look at – retro-commissioning, sorry, or the tune-up is a rigorous quality assurance program that seeks to ensure that the building performs as expected. And it really is – it can be a low-cost way. I'm not saying it's cheap to be able to do retro commissioning. There is a cost that's involved with it, but it is shown that by doing retro commissioning on average that savings are 10 to 20 percent. We've seen a number of case studies in schools in New Hampshire that had to pay $120,000.00 to be able to do retro commissioning, but they paid after three years on that cost. They're saving now $70,000.00 a year after evaluating their buildings' systems.

They know they're part of a comprehensive energy policy, something you tie back to the energy audit and the long-term goals and ability for what your building will be. And most important, just to involve staff and building officers so they understand how these buildings are being maintained or should maintain and just clarifying a point of why you should retro commission is that building systems are not typically functional at initial occupancy. But even if you're talking about a building that may have been constructed 10 years ago, things change. The use of the building has changed from maybe when it was constructed back in the 70's or 60's or depending on some of the public facilities are even older than that.

And you know, just the systems themselves continue to make upgrades to our facilities are more complex than they originally were in those buildings. So it's a great opportunity to push forward to get greater energy efficiency savings within your building. Next slide.

Scott Jarman: Okay thank you. This is Scott Jarman with Austin Energy and I'm gonna talk about our – the city of Austin's, what we call ECAD or Energy Audit Conservation and Disclosure Ordinance. Next slide. Okay, Austin Energy is the municipal utility for the city of Austin, so I'm both a Austin Energy employee and an employee of the city of Austin. We are the second largest utility in Texas and eighth largest in the country.

Some of the drivers behind our ordinance include a 2003 generation resource plan that council approved, and the 2007 Austin Crime and Protection Plan. The Crime and Protection Plan sets goals for Austin Energy related to our generation of resource mix, renewable energy and conservation activities with our customers. And it also sets goals for city of Austin municipal operations as far as transportation, our buildings and other areas associated with reducing carbon emissions. Next slide.

To dig a little deeper into the Austin Climate Protection Plan, it is a greenhouse gas reduction plan and it has five major components. As I mentioned, the municipal component is associated with the city of Austin operations. The city of Austin is about the third largest customer of Austin Energy with our water utility and our municipal operations. There's the utility plan associated with how we resource our energy and a community plan, how we reach into our community with a plan to reduce or to go neutral, which is to cap our greenhouse gas emissions based on 2005 levels.

The fifth component is the Homes and Buildings Plan and the Audit and Disclosure Ordinance falls under that fifth component of the action plan – the homes and buildings component. Next slide. Okay, under the homes and buildings component, there's several parts to it also. We are working to have all new homes zero net energy capable by 2015. Because we are the city, we set our building codes and our energy codes. And so new homes, by 2015, the idea is that the building codes will be at a place where you can install a solar system of reasonable size and your home would be zero net energy.

So the goal would be to set these homes up to be able to install solar and make them energy efficient enough where a solar system would produce all the power that they need over the year. And similarly, in the non-residential to set goals of 75 percent more efficient by 2015 through building energy codes. The third component is the one we'll drill into a little deeper today, which is the audit and disclosure ordinance, disclosure of historical energy use to facilitate energy improvement in existing homes and buildings.

As we get into that you'll see how those words sort of manifested themselves in each of the different market sectors of residential, multifamily and commercial, and enhanced incentives for green buildings with carbon-neutral rating systems. Next slide. As part of this, in 2008, a year after the Austin Climate Protection Plan

was passed, a stakeholder task force was formed specifically to look at the existing building excerpts. It broke into three subcommittees, residential, multifamily and commercial. I participated specifically in the commercial subcommittee. The subcommittees developed recommendations, and those recommendations resulted in a council resolution that was passed in late 2008.

At the same meeting, they also passed an ordinance that required audit and disclosures and it varied depending on the market sector, and I'll get into that a little further. Next slide. The city council passed the ordinance in 2008 and it became effective June 1, 2009. It went into – each sector had a different sort of phase-in date, if you will. June 1, 2009, the residential sector became enforced and it required audits of homes at the time of sale. But it impacted all three market sectors, single family, multifamily and commercial, and about May 2011, after we had worked through many issues and looked at the ordinance, we revised the ordinance in an attempt to make it better and easier to implement.

So lessons learned in that area. When you create an ordinance and once you get into implementation, you'll potentially learn things that you want to change. In this case we were able to make some revisions to the ordinance to help them make it more effective. Next slide. In the residential sector specifically, starting June 1, 2009, we required a time of sale audit and disclosure to the buyer or potential buyer of that home. There were some exemptions. For example, if the home had participated in our rebate programs and had completed energy efficiency upgrades and had achieved at least $500.00 worth of rebates from us, they were exempt.

If the home was less then 10 years old, it was also exempt from the audit requirement. We did require certifications of our auditors for quality control purposes. They needed to be either BPI or resident certified. And we worked with product companies to develop those. It was not a significant audit business in the residential sector in Austin and numerous companies sprung up to provide this service primarily to the realtors who promote this or bring this up to their clients.

The goal was to set an audit that cost less than $200.00, so that became a little bit of a limitation as to how much we would do in terms of testing. We do require duct testing as part of that. We market it and promote it to the realtors who are primarily there at the time of sale. There was a goal to have 25 percent of the homes sold upgraded, and that's been a pretty elusive goal because of the

way it was written. Because there's so many exempted, you might want to set a goal of 25 percent of the homes subject to the audit – having them upgraded versus total. That's just one of the lessons we learned. Next slide.

So some statistics. These are getting to be a little bit dated, but we still have been receiving audits in the range of probably 3,000 a year. Through October 2011, about 8,800 audits have been performed. Sixty-six percent of those, as best we can tell, of the required ones to audit – that we're required to audit – actually performed audits, and of the audits we received, the kind of results we were getting, 79 percent of the homes needed some type of weatherization, whether that's solar screens or insulation. We think it is pretty significant, averaging around 20 percent.

About 1,100 homes appear to have been upgraded either prior to or after the time of sale. So it's hard for us to track statistics but there is the belief that if the homeowner knows that their home's going to be subject to the audit prior to them putting it on the market, they may participate in the program. So we looked at participation rates in our rebate program one year prior to and one year after the sale. Those are the figures we came up with. Six percent of all homes sold made upgrades, which his short of the 25 percent that was set as the goal. Next slide.

In the area of multifamily, this is a little different. Residential went into effect in 2009. Multifamily, that market sector had two years to have an audit done on their multifamily property and this applies to the owner of those properties. The idea is that the audit would result in a disclosure document that would be presented to tenants at the time of lease. I've got an example of that. We have not sent them out, but we are soon to do that. Again, it required certified auditors and we do a sampling of apartment units with testing of ducts and visual inspections. In this case, there are still exemptions for age and prior energy upgrades.

If the apartment complex is newer, presumably it was built to code and the codes are stricter in the last 10 years and those should be more energy efficient facilities and if they have gone to our incentive program. We have seen a significant increase in our incentive and rebate program in the multifamily sector potentially tied to the ordinance. Now one of the things that's much different here is it does require upgrades for high energy use properties. This has been also a bit of a challenge to determine high energy use properties because it was defined as 150 percent of the median.

So first we have to determine immediate energy use from multifamily properties in Austin, and that's a pretty big data gathering and analysis exercise, and then determine which properties are at 150 percent of that number. We have done that and sent letters to those properties, and I believe there's 53 properties that we have identified has high energy use. They have some time to do the upgrades and that deadline has not passed. We broke them into different fuel types and eras, so we has six different categories of multifamily properties. So I guess move to the next slide.

Okay, so through October of 2011, there was about 1,300 properties covered by the ordinance. Two hundred seventy were exempted through either being less than 10 years old or they had performed energy upgrades. Of that, 570 were where audits had been received, so about half of the non-exempt properties had submitted their audits – had them completed and submitted. That was approximately 4,300 buildings, and that's even more individual apartment units. Of those audited, the results showed leakage of about 40 percent, so that's very significant. We have pretty significant rebates for duct sealing in multifamily and have seen a significant increase in that participation in our programs. Next slide.

So I jumped a little bit ahead. We developed energy use indexes for six apartment types, but it was all electric, electric/gas and then we broke it into three age groups. I don't recall exactly what those were – pre-1985, 1985 to 1995, '95 to 2000 – they were broken into groups like that based on kind of code eras. We developed exemption certificates so that if a tenant asked if a property has completed their audit, the owner could show them or the property manager could show them that that property was exempted from the ordinance. And we have developed notices of high energy use, so next slide.

Here's an example of what the exemption looks like and it shows was type of upgrade that property had made, whether it's air duct seal or replaced with Energy Star equipment; efficiency sort of exemption certificates that a property would receive if they were exempted from the ordinance. Next slide. This notice is actually a requirement to show to the tenants for all the properties, whether they are high energy use or not. We have not sent these to the properties. We probably will send these out in the next month. But we have developed this scale and hope that it will – tenants will ask about energy efficiency more and choose apartments to rent based on their energy use.

But this is kind of our, I guess, Energy Star energy use index, if you will, for our apartments. And I think this is gonna be a nice tool. So I guess the next slide will get into commercial. Like the other ordinances in the country, we use the EPA's Portfolio Manager tool for building ratings. Because the tool was designed to be fairly simple and does not require test equipment, we do not require certified raters. It is an annual reporting requirement and a time of sale disclosure. We primarily focused on the annual reporting requirement.

We do not require an ASHRAE level one, two or three audit or a retro commissioning as is with some of the ordinances. During the past four deliberations, the discussion centers more on voluntary compliance and, I guess, the concern of the cost of the retro commissioning and audits. And it was decided that we would not include those in the commercial side of the ordinance and see what voluntary benchmarking and disclosure – how that would affect the marketplace. We're about two years into it and only about six or eight months since the first reporting deadline. So we're gonna kind of follow up and find out how effective it is. When we report back to our boards and commissions and our city council, the thought was that there may be revisions to the ordinance if it's not having its desired impact.

Now in our ordinance revision we decided to make a phase in of the requirement based on the square footage of the building. So as of June 1, 2012, buildings that are 5,000 square foot and greater were required to report. Next year, buildings of 25,000 to 30,000 square feet will need to report and the following year 30,000 to 10,000. In our original ordinance we did not have a floor, so buildings as small as 100 square feet, in theory, would need to have reported, and all of them were to report by the same deadline. This allows us to market more effectively as we phase it in.

The floor also helps because there's a lot of facilities that can be defined as buildings that it really doesn't make sense to use Portfolio Manager to rate because it does have some limitations, particularly on very small buildings. Next slide. Okay, another thing that we did, and this is similar to some of the other cities, is we actually set up what's called an external report group Portfolio Manager. We initially had a form that we put together that the building owner would fill out and report to us their score from Portfolio Manager. Portfolio Manager will allow you to report directly from the tool, all we do is set the link on our website and the building owner picks that link up and it loads our annual report

into their account and they can release that data directly to us. So that's a very nice feature within Portfolio Manager to facilitate the reporting to us.

We set a reporting period similar to taxes. You have from January through June to report from the previous year, so we put the link out there from January 1. You're not gonna have your utility bills to be able to report on the previous year until later in January. We developed an internal database to track this, and this has been one of our challenges. There's a lot of data involved with this and DOE has worked on some tools to help with that. We've sent letters to the owners. We had to develop building ID numbers. We had to come up with our own numbering system that is tied to the county's tax record ID numbers. And we requested the owner report with the ID so we could cross reference these buildings to know they were, in fact, reported. We had moderate success with building owners actually putting those ID's in.

We also provided aggregated data to building owners, and the examples, if you have a strip mall or shopping center with multiple meters, we would provide aggregated energy use data to the owners so they could report that facility as one aggregated facility. Next slide. We held workshops for people to come in and help them rate. We had computers set up and staff that sat down side-by-side with them. We developed an energy use worksheet that would help with data gathering. We developed how-to guides and put those on our website.

Where to get utility bills – so contact information of the gas company and our chilled water business and with Austin Energy to request utility bills. We actually worked with EPA on an Austin-specific webcast, recorded that and put it on our website. Because we're in the utility, the utility is implementing this ordinance on behalf of the city. We also were able to promote to our utilities key accounts team. Also, we had mixed owner feedback. Some was very good feedback and then another cases building owners kind of pushed back because they said this really doesn't benefit us or I don't have access to utility bills and my tenants pay the utility bills and things like that. So I would say we had some positive feedback and some not-so-positive feedback, but I think overall it was positive. Next slide.

Okay, so here's some of the numbers. We have 12 workshops, 108 participants. We have about 67 percent reporting, which is actually pretty good. Offices in schools reported at a pretty high rate, 60 percent reported. The overall score was about 62 and we

had two different reporting options. Legally we could only ask for some very basic information and we put that on our website, but we also gave an option for owners to provide us more information from their portfolio manager account. We called that enhanced reporting. I guess surprising to some, we had 60 percent actually release more data to us than was legally minimum required. Thirty-eight percent didn't get a score at all, but we did collect an energy utilization index.

Like I said, the building ID's, almost half of them submitted building ID's, so we had to cross reference those in other ways. We sent about 59 aggregated data reports to the facilities that requested it. Next slide. Some considerations. I think it's very important and it's very good that there are some guides out there. When we started to develop this, there were not so many guides available, but clear ordinance definitions, just simple things like what is a building, that's not necessarily as clear as you might think. Buildings are connected to each other or are they freestanding? There's very different definitions.

Clear definitions are very important. You get a lot of questions if they're not clear. We marketed to many channels, though our local BOMA chapter, to other local organizations. Contractors that provided services to customers were also another good channel for marketing. They went out and approached apartment complexes and approached realtors in our commercial properties to say we can provide these services for you, so that's another touch point. We developed websites and information on those and we provided rating and reporting training and assistance.

The database development of how you track all this data is probably one of our biggest challenges, to track and report. I put in there correspondence management because if we're sending reminder letters and requesting information letters, we need to track that so later if the questioning comes up did you inform that customer or that owner whether they needed to report, then we have documentation of that. So managing the flow of correspondence can be a challenge. I think this is my last slide, so you can – next.

Andrew Schulte: Scott, I wanted to say thank you for that presentation. I think we have time for about one question, maybe two. The first one that came in while you were speaking, regarding the disclosure aspect of the ordinance, one attendee wants to know what kind of resistance you may have run into, if any – who it came from and how you worked through it.

Scott Jarman: I guess it would depend. I don't know that we saw a lot of resistance in disclosure on the single family side. Most of our discussion was with the realtors, and I think there was concern that it would affect the sale or potentially negatively impact the sale. But I think that's the intent of the ordinance is that disclosure would create that discussion about the home's value or potential upgrades as far as a sale.

In the commercial side, we do not proactively disclose this publicly, so this information is not put on a public website. I know some ordinances do require this data to be published on a public website, but there was concern that other competitors in the commercial space would have access to what some may deem as competitive information on their buildings. So there was some resistance there, but we are not proactively disclosing that data.

Andrew Schulte: And maybe just one more. Scott, on the commercial building side, was there any requirement for professional engineers to certify the Energy Star score received by the buildings covered by the ordinance?

Scott Jarman: No. it could be a self-rater – you could rate yourself, or you could hire someone. But obviously if you want the energy star label on your building, you need some of those requirements that they do require the hiring of a professional engineer or architect to verify your input, but for the purpose of the ordinance, no.

Andrew Schulte: Great, and thanks to those of you sending questions. If you have other questions that come up, please continue to type them in and we'll get to them towards the end of the session. For the time being, in order to keep things moving along, we do want to invite our next speaker, Hilary Beber of the New York City's Mayor's office. Hilary is a policy advisor in the New York City Mayor's office of long-term planning and sustainability.

This office is charged with implementing the Plan NYC, which is the city's 25-year sustainability outline. The initiatives that together make up Plan NYC combine to provide a roadmap for achieving a 30 percent reduction in greenhouse gases. As a related part of this effort, Ms. Beber helped to develop and pass the New York City Greener, Greater Buildings plan, which is a package of legislation to address energy efficiency in New York City's existing buildings. One element of the Greener, Greater Buildings plan is, in fact, local law 87 which requires audits and retro

commissioning, which Hilary will talk to us about right now. So Hilary, passing it over to you.

Hilary Beber: Great, thanks Andrew. If you want to just head to the next slide. So like it was just being explained, my office is charged with the creation of Plan NYC and the implementation. I just wanted to step back and give an overall picture because this helps explain what led us to some of the reasoning for the work that we did in terms of the Greener, Greater Buildings plan and the audits and retro commissioning requirements. So Plan NYC, our large sustainability plan, covers a lot of different aspects between air, water, air quality, energy of course, so we do our out culminating goal of a 30 percent reduction in greenhouse gas emissions by the year 2030.

If you advance to the next slide you can see the breakdown of our greenhouse gasses. If you can take a look at this pie you'll see all the colors shaded in blue are the emissions coming from our buildings sector. So they clearly made up the largest portion of our emissions. In fact, in 2009, we're still hovering around 75 percent of our emissions coming from buildings. But it really is a big chunk of the pie, and if we're gonna reach our 30 percent target, from very early on we knew that we had to focus all of our – a majority of our efforts in terms of reduction from our building sector.

So click again. This is the point Carolyn made earlier in terms of the focus being on existing buildings. So in New York our target year 2030, the buildings that we had then in 2030 – 85 percent of them are the buildings that exist now. So making these upgrades and improvements to our existing building stock is really crucial. The next slide. In case that wasn't already made clear, here's one more image just to show you in terms of how we're gonna reach our target of the 30 percent reduction. That top dotted line, which shows business as usual, shows how our emissions would have increased over time if we had done nothing and then the two straight lines show a 30 percent reduction.

So in addition to doing our 30 percent reduction, we have to have additional increases to account for the growth we would have over time. The blue area, which is the largest, shows the biggest amount of reductions are going to have to come from more efficient buildings. So that's really all this background is, to prove one point is that we did a lot of analysis and we had proof in the numbers that we really are going to have to make our buildings more energy efficient and reach our greenhouse gas goals. So this

is one of the first things we did off the bat, to have the data, to have the numbers and to be transparent about it.

So the real estate community was well aware, they were on board for this target and now we know if we're going to readjust this target, we're going to be focusing a lot of our policies around the buildings. So all this background analysis, and part of it being part of the bigger plan, was all very helpful to getting things off the ground. So that being said, you can go to the next slide. This plan was released back in 2007 and in 2009 we introduced our suite of policies called The Greener, Greater Buildings plan, which was really the first big effort that we did to really target the energy efficiency in our existing buildings.

The Greater, Greater Buildings plan is made up of four pieces of legislation, which you see listed on this slide, and then two other pieces, one which really focuses on training and outreach and education for the energy and building community, and a sixth piece, which focuses on energy efficiency financing. I'm always happy to talk about that offline. Just to quickly touch on each of these laws, they really were all part of a package. This is something that is different, I think, from other jurisdictions that we ended up passing just benchmarking legislation or disclosure as pieces.

We really thought it was gonna be important to do this all together and as one and doing it as part of a comprehensive package. We did have reasons for that. There's different – each of these different pieces of legislation address different parts to get at energy efficiency in the buildings. So the first was adopting a New York City energy code. Prior to that we had a state code which we didn't have control over and there was as major loophole that said if you were renovating less than 50 percent of your building it did not need to meet the energy code.

So New York state law allows any municipality to adopt their own code as long as it's more stringent, and that's exactly what we did. We adopted a New York City energy code and removed that loophole. Now anytime anybody does a renovation it has to meet the energy code. That was just the baseline in terms of building improvements over time, so we really needed to establish that. We've done a lot of things with the energy code since adopting our own.

Then the next piece really is the benchmarking and disclosure component, and that's really about information and transparency,

what Scott was starting to talk about that they're doing in Austin. This is getting all of our large buildings to annually benchmark their energy use in Portfolio Manager and we're actually making that information publicly available. This is pretty good timing because next week will be the first time that information from the private sector is made public. We're gonna be disclosing the non-residential buildings information next week and then next September we'll start disclosing residential buildings as well.

So that was the first piece about, you know, the next piece about gathering information, trying to get the building community to really understand how much energy they're buildings are using. That's been in effect for two years and we just finished the second year of benchmarking. Next year will be the third, and that's sort of gotten the ball rolling. Then what fits in next is our audits and retro commissioning, which I'm going to go into a lot more detail about today, and that's really about understanding the systems in your building and how you could actually upgrade and improve their efficiency, and the retro commissioning, which is about the tuning and operations that Carolyn explained.

Then the last piece, the lighting upgrades and submetering, that law was part of this package because it addressed one of the issues that had come up in terms of developing this package. We originally proposed audits and retro commissioning and retro fits so the building owners would have to implement the measures recommended from the audit. One of the main sticking points that came up was that many times there's a split incentive in terms of the systems being used in a building. One entity, whether it be the owner or the tenant, will be paying for the energy bills and the other entity will actually be using the energy.

So if, let's say the tenants are using the energy and the owner pays for the upgrade, it's a different incentive for the tenants to reduce their consumption. So we removed that retro fit requirement and then decided to require submetering of all the tenant spaces. This is something the city was capable of doing. We can't require the owners to charge the tenants based on how much energy they use, but we can require them to install submeters. That's what the big piece was. Then the lighting operation was added because after analysis, it seemed to be the most cost-effective of all the retrofits and it was a good investment on the owner's behalf. We just outright required that retro fit for all of the large buildings.

So each of these laws make up a different piece and they're all trying to address all the different pieces – components – of getting

our largest buildings upgraded. So that's why we did it as a package, because we saw we needed each individual component to make a whole. So now if you just go to the next slide I'll start to focus more in on the audits and retro commissioning piece. So in New York we have about a million buildings, but we decided that was a little overwhelming, not only for the building committee, but also for implementation. We needed to find some sort of cut-off in terms of what buildings would be required to comply.

We decided to look at size for a number of reasons. In New York, we didn't think it was necessary to divide up commercial and residential, we're more looking at size. So we looked at buildings over 50,000 square feet, which actually accounts for about two percent of the total buildings in the city, but almost half of the energy consumption. So it's a relatively small number of buildings, but they're using about half the energy. So this was actually a pretty good cut-off for us.

The other reason was that the larger buildings tend to have sophisticated owners or they have third-party management or they have engineers on staff, so implementing this type of legislation would either be something they might be familiar with – they might be benchmarking their property or they've done an energy audit, but it's a building community that's fairly familiar with this type of work. So that's why we chose the 50,000 square foot cut-off. We've included both residential, commercial, industrial, religious schools. There's no distinction in terms of our legislation between what type of building. It's all of our largest buildings.

So if you'd advance to the next slide, so in terms of our audit and retro commissioning law, what are we actually requiring? So our law is requiring both an energy audit and a retro commissioning process. In terms of the energy audit, we are requiring ASHRAE level two as a reference document and a standard for all the buildings to use. And then for retro commissioning, when the laws were being developed – and I guess to this day there really is no national standard in terms of retro commissioning processes, so we developed a city-specific checklist.

It identifies 23 different items that the building owner is required to look at. It covers operations and maintenance and different systems within the building. They're required to do through all these in terms of ___. They have to look at all those different 23 items and if something is out of place or in accurate or not doing what it's supposed to, those items are them supposed to be corrected. So that's sort of a New York City definition of retro

commissioning that we developed with a group of stakeholders, engineering and retro commissioners within the community that felt this is exactly the bare minimum of what building owners should be doing for retro commissioning.

Another thing I want to point out in terms of our law is that with these large buildings, we required the energy audit and retro commissioning of what we call the base building systems only. So those are the systems that aren't – that are owned and operated by the building owner serving the central space and sometimes the tenant's spaces. And it does exclude the systems that the tenants own and operate. That was another thing that took us actually a very long time to develop with the building community in terms of how this would be defined in terms of who owns and operates the systems. This is where we landed.

So everyone thinks this is a fair way to do this in terms of who's laying out the money and who's receiving the energy savings benefits in terms of doing this type of work. So we can move on to the next slide. So what we're requiring is the ASHRAE level two and the New York City version of the retro commissioning. Our first buildings are coming due in the year 2013. We did a staggered schedule, so from 2013 for 10 years, a tenth of our large buildings come due and it's based on a random sampling of the last digit of your block numbers the year you come due. So if your block number ends in a five, you come due in 2015, 2025 and so on.

These buildings during this time are required to do the energy audit and retro commissioning, and they're then gonna submit that to the city. What you see here is the efficiency report, so just as some background on that, it's the detail everyone wants to get into, but instead of actually collecting the energy efficiency report – the energy audit report and the retro commissioning report – we're just gonna be collecting data points that are going to be gathered in those reports. I believe Cody is going to touch on this afterward in his presentation because it's something we've been working very closely with the Department of Energy, and Austin has been involved in this in terms of collecting this data.

This is actually gonna be one of the very valuable pieces that comes out of this whole process. Of course it's valuable for the individual building to learn how to improve their building, but collecting this information is gonna be valuable to the community at large in terms of identifying what are the most common energy efficiency measures recommended for a certain type of building,

for a certain type of system. These are some of the things that we're gonna see coming out of the data that the city's going to be collecting. Go to the next slide.

So each of those buildings are gonna come due and they're gonna have to submit to the city. We have a joint effort, so in the mayor's office we're working on developing a legislation and doing stakeholder outreach. Our department buildings, they're responsible for enforcement and these reports are going to be submitted to the department of buildings. We have some penalties for people not – who don't meet the – their deadlines and they're going to be doing spot checks of the documents they received to ensure a high level of quality.

We also have some other things built in for quality control in terms of requiring an engineer or registered architect or certain other people with different qualifications who can sign off on the work to ensure that things are being submitted accurately. So that's just a very general overview, in the next slide, in terms of what our laws cover. There's a lot of pieces that are still moving. Right now we're in the process of finalizing what we call the rules and the law has been passed and there are a lot of details in the law explaining what has to be done. But the rules that will accompany law 87 has a lot more of the technical details, so a lot of the questions that came up after the law was passed is for the retro commissioning, it requires testing. How many of the systems have to be tested? Is there a certain percentage?

So the rule goes into all those specific details and that's been a very open public process that we've been working on with the community. We actually started out awhile ago. We had a public hearing March and we've been receiving comments and feedback since then and doing different versions. You can see the public draft on our website. We're very close to finalizing that rule. I'd like to say by next month or sometime in September for rule will be finalized. It'll be a useful tool for other cities in terms of looking at all the detailed requirements for both our audit and retro commissioning in terms of the people qualified to do the work and then what actually needs to get done.

Then the other paper we're working on, like I mentioned, is the data collection form, so the series of forms that are gonna be collected as opposed to collecting the full audit and retro commissioning reports and what fields are being collected. Our goal is to do that all electronically so we'll be able to fill that out and upload them into the city, similar to what you do in Portfolio

Manager. Then what's the other piece? That's all the technical stuff that's getting done and then there's a lot of stuff that needs to be done in terms of outreach and training.

We've partnered with Urban Green Council, which is the New York City chapter of USGBC, to do outreach on local 87. We worked with them last year to do outreach on local 84, which is our benchmarking requirement. They have speakers who volunteer and who have been trained on the law. They are now actually, starting next week, are going to be giving presentations to building owners, property managers, different building associations here in the city, to go into a lot more detail about the law, what's required of them and how they can comply.

They actually created a step-by-step checklist for the building owner in terms of what they're suppose to do to comply with the local 87. So that's been a great partnership, a great experience in terms of the benchmarking outreach and how we're doing it for local 87. This is very critical in terms of spreading the word. There's only so much the mayor's office can do in terms of getting the word out, so having people on the ground and giving these presentations and making them widely available is something very helpful in terms of raising awareness.

Another of the partnerships we've been working with is the Association of Energy Engineers and the Building Commissioning Association, in terms of ramping up the amount of available training here in New York City. We feel – we did some initial analysis that we – we think there's enough energy – we believe there's enough energy auditors already existing within New York City and in the tri-state area of the law. We do think we're short on people trained for retro commissioning, so that's something we're working on. The Building Commissioning Association actually developed a three-day training specifically for retro commissioning and they offered it here in New York a few times and we're hoping to offer that again starting in a couple months to offer more of those trainings.

AEE has been offering more of their certified energy manager trainings, CEM, and certified energy auditor trainings, CEA trainings, here in the city. So that's also been something really important to the mayor's office in terms of really increasing the quality and the skill and the workforce here in New York in terms of helping comply with this law. And it's just been identified, it's been very critical for us to be partnering with all these different associations and organizations because we certainly can't do it by

ourselves. We're not a training entity and so they're the groups that has the expertise and the skill and the experience, so it's been great working with them and we plan to continue doing that for the next few years in terms of this work.

I think that's everything in a nutshell. I sped through it pretty quickly, but I'm sure they could be some questions around different aspects of that. So if I can answer any questions now, if we have time before we move on to the next presentation.

Andrew Schulte: Sure, and I think we do have a little bit of time now, Hilary. One question that came in, and actually it came in during Scott's presentation, but I think it could be – you could be a relevant person to respond to this, an attendee noted that benchmarking and energy audit policies really rely on having good access to utility data. And obviously it's at least somewhat easier to get your hands on that data when you're dealing with a municipal utility who's aligned with the city that's passing the policy,.

I know that New York worked very closely with Con Ed to come up with a solution for data provision to commercial customers to sort of facilitate various policies in the Greener, Greater Buildings plan. I was wondering if you could just say a few words about that process of coordination and the role of utility involvement on policies like this.

Hilary Beber: Yeah, we're always as lucky s Austin to have the municipally-controlled utilities. But Con Ed has been a really great partner in terms of us working to get this data. When we started working on the legislation prior to even the Greener, Greater Buildings plan being passed back – that was passed in 2009, but we started talking to Con Ed about this in 2007. We were really talking to them about data access because we knew that was so critical. It really is pretty difficult to benchmark or do an energy audit without having that type of information.

So prior to that, it wasn't very easy to get your information unless you have your own personal account with Con Ed to access it, so we started talking to them about it and seeing what would be the best way to go about doing that. And for us it actually resulted in filing a rate case with our public service commission at the state level requesting that this be mandated. And the public service commission responded requiring that Con Edison provide aggregated building level data upon the request of the building owner.

So Con Ed responded and they have been doing that and they are – they charge $102.50 to pull this data for a building owner. I think that just exactly covers their cost of doing this type of work. The reason that the state and everyone was comfortable with this is because it's aggregated and it covers the whole building energy. It doesn't single out individual tenants, so they don't need to get tenant sign-off from each person in the building, but rather the whole building energy use. This is pretty critical in terms of doing the benchmarking. It's very hard to knock on each tenant's door and get that information.

So now the building owners have access to that data. They've been able to do the Portfolio Manager benchmarking and that's really been an important piece of all of this, is having that information and data.

Andrew Schulte: Great. Thank you. Actually one question that came in while you were answering on that, how did New York City set the fine on that for non-compliance – local 87 – and how was the fine applied? How was that money used once it was collected?

Hilary Beber: We'd love to say the money's collected and then invested in energy efficiency, but it's – fines just go to the city's general fund and then it's not going to be allocated to anything in particular. There was a threshold that was talked amongst the community in terms of – in some cases people thought the fine was too low. People would just pay the fine and opt out of doing the energy audit. If it was too high, it would be some buildings that intended to do the work but weren't able to, it might penalize them.

So this is sort of the middle ground where it wouldn't be intended for people to pay the fine and get out of doing the work but rather really be a suitable penalty for not doing it in the first year or two, but then getting them on board to actually complete the energy audit. I do believe the department buildings, they might have some analytics in terms of how they set fines. I don't know the specifics from the mayor's office, but that was sort of our guidance in terms of how we wanted the fines to be set. I would have to ask the department buildings if they had a process.

I know they had a formula for calculating filing fees when people submit documents to DOE in terms of how much they can charge for a filing fee. That really just covers the cost of DOE actually processing the paperwork.

Andrew Schulte: Thank you. I think that actually those are the questions that have come in since you started your presentation, so I'd like to encourage attendees that any other questions that have popped up throughout the presentation either for Scott or for Hilary, please type them in and we'll certainly get to them. We do have a little bit of time now.

Hilary Beber: I just want to say if you go to the next slide, it's our website and that stands for Greener, Greater Buildings plan. You have access to all four of the laws, the rules. The supplementary documents that go with that are the work that we're doing with our partners. And I'll say they definitely kept the benchmarking page for our disclosure and you can also see our benchmarking report that was released this month.

Andrew Schulte: Thank you, Hilary. Hilary and Scott will be on the line until the end of this call for any questions that attendees might be formulating. If you want to sign in, please go ahead and type in any questions that you have into the question window. While we're thinking about that, we did want to spend just a few minutes making you aware of a couple of related DOE initiatives that are taking place in parallel to SEE Action and that may impact or assist you as you work on developing policies and programs to drive energy efficiency in commercial and public buildings in your cities and states.

One of these in particular – I'm going to run through these quickly, but I'll come back to this – is the standard energy efficiency data platform. This is something that both Scott and Hilary made reference to in their presentations. So in just a second I'm going to ask Cody Taylor from DOE to say just a few words about this project and how it ties in with local benchmarking and audit disclosure regulations. There are a couple of other efforts going on and all of these have links associated with them.

This includes the open energy access effort, which is the link you see below, the commercial building asset rating program and also the development of a buildings performance database. All of these are initiatives taking place at the DOE right now. Basic information is provided on the slides including URLs, if you want to go take a look at learn a little bit more about these. In the meantime, however, I do want to just click back to the slide on the SEED platform and just let Cody say a few words about that, if you would. Cody?

Cody Taylor: Sure, thanks Andrew and thanks to Hilary and to Scott for talking about how SEE relates to laws that are in place in both New York City and Austin. So I'll just touch on this briefly and anyone who's interested in welcome to follow up with me more. So the Department of Energy Building and Technologies program, which is the portion of what I'm representing today, had been working on the SEE platform for about a year now.

The basic idea is a freely available standardized database tool that cities and states can use to store data that is being disclosed to them or data that they're generating out of their own energy efficiency programs in one form or another. And then to be able to both manage that data internally have some reporting capabilities and have expensability so you can hire folks to add on features that you may want. And also to have the ability to easily publish data out, and that's one of the keys here is that it makes it easy for jurisdictions to publish data out in a standardized format and to store it in a standardized format this is comfortable to how other people are storing it.

So both Austin and New York are considering storing their data in this format and that includes both the Portfolio Manager data that they talked about, the benchmarking data, and in fact some of the other types of data as well. That can include the energy auditing data and retro commissioning data can all be put in one place here. And those are pieces that you can't currently put into Portfolio Manager, but you can combine Portfolio Manager data with energy audit data a retro commissioning data together in these platforms.

So this is a tool that's meant to make it easy for a city to link to Portfolio Manager, pull that data into their own city-owned database and in their own city-owned database, combine it with whatever else they've already got. So I'll leave it there for now. Again, if you have further interest in that, please feel free to contact me, Cody Taylor, at DOE and I'm happy to provide you more information that's currently in data with a number of cities. We're looking at our version of 1.0 release around the first of the year, so a few months away.

Andrew Schulte: Great. Thank you, Cody, for touching on that. I just wanted to make sure that we sort of closed the loop from the references of both Hilary and Scott made to this initiative. So I appreciate you jumping in on that. With that I think we are pretty much at the end of our programmed presentation. We did want to let you know that again this is the third in a series of webcasts and we're planning on holding two more webcasts which will cover the final

two of the priority policy areas for the SEE Action commercial working group.

This includes strategic energy management programs as well as high performance leasing strategies. Dates and times are still to be determined, so stay tuned, but typically we're looking at probably the end of September or the end of October for these final two presentations. But you will be receiving information and invitations, so keep your eyes peeled. With that, I'm going to leave this slide throughout the remainder of the presentation. Here you can see emails addresses for each of the speakers from today's presentation as well as the URL that will take you to the SEE Action webpage and specifically the existing commercial building working group webpage for further information, including fact sheets and policy design guides that can assist you as you explore opportunities to implement these policy initiatives in your own jurisdictions.

So with that I think we're going to keep the floor open for any further questions. I don't think I've seen any more come in since the last one that we posed to Hilary. We can definitely stay on the line for a little while to answer questions that come in, so if there are any please type them. Otherwise, we can probably wrap up. Again, if you've got any questions, that you think of after the session ends today, you can certainly email any one of us and we'll make sure you get a response. We'll just take a few minutes now to see if any questions come in through the chat window. I don't seem to see anything coming in, so I think we may actually begin the process of wrapping this up a little bit early and letting you all get on your way.

We do want to thank all of our attendees for taking time out of their busy schedules to join the session. We hope it was useful and it provided an opportunity for you to learn more about energy audit and retro commissioning and the role that those practices can play in energy efficiency policy at the state and local level. I wanted to thank all of our presenters today, Carolyn Sarno, Scott Jarman and Hilary Beber, for taking time to speak. And with that, I think we can wrap things up. To all of you, I hope you have a great day and a great long weekend and we look forward to seeing you next time out for our next SEE Action commercial working group webinar. Thanks very much.

[End of Audio]