Evaluating Progress of Climate Actions

Webcast Transcript

December 7, 2011

Contents

Webcast Agenda and Meeting Logistics

Slide 1: Introduction Slide

Neelam Patel: Hello, everybody. My name is Neelam Patel and I would like to welcome you to our Webcast today on Evaluating Progress of Climate Actions. This Webcast is hosted by the U.S. EPA Local Climate and Energy Program.

Slide 2: Title Slide

Neelam Patel: And this is part two of a two-part Webcast series. Our first Webcast was three weeks ago on climate action planning. And today we'd like to dive deeper into the concept of evaluating progress of climate actions.

Slide 3: Webcast Agenda

Neelam Patel: And so on behalf of myself and Dan Wallach, who helped organize this Webcast, we'd like to go ahead and overview our agenda for you today. As you see, Timothy Burroughs from Berkeley, California will start us off. He will provide an overview of measurement and pepper it with examples of projects that are ongoing in Berkeley.

He'll be followed by Zach from Austin, Texas. And Zach will go into the scope of – throughout his presentation, he'll cover a number of topics but he'll go through the scope of the inventories that were done in Austin and also some of the project level data that Austin used and analyzed. And he'll go into detail about how Austin goes through this process.

Zach will be followed by Aaron Milano from the City of Durham, North Carolina and Aaron will just spend a few minutes talking about his Residential Energy Efficiency Program and how they actually manage the amount of data that comes in through this program and connect it to their climate work.

And lastly, we'll have Shannon Parry from Santa Monica, California who will take us back to the big picture and discuss the process that Santa Monica went through in the sustainability effort to set indicators and targets for a number of different actions.

So as you can see there's a variety of topics to cover related to measurement, greenhouse gas inventory work, how to select metrics, where does your data come from for this metric – your data sources, how to manage that data, analyze it and then communicate it.

So we're very lucky today to have on the line a number of local experts with in-depth experience. I mean they're really the ones who have started digging deep into this area. And so I encourage you to submit questions throughout the Webcast for our question and answer session which will be held at the end of the presentation.

I'm going to go ahead and turn it over to Lauren Pederson from ICF to go through some of the logistics on how to use GoToMeeting.

Slide 4: GoTo Webinar Software Logistics

Lauren Pederson: Thanks, Neelam.

Just a few logistics to get us started today. You'll be muted throughout the Webcast to minimize background noise and you'll be able to submit questions and comments in writing as Neelam mentioned.

The PDF and audio files of today's session will be available at the URL http://www.epa.gov/statelocalclimate/web-podcasts/index.html. And throughout the Webcast if you have any technical difficulties, please e-mail me at lpederson@icfi.com.

Next slide.

Slide 5: Questions Slide

Lauren Pederson: And this is how you'll ask questions today through the GoToMeeting question pane. We'll compile these questions and then ask them at the question and answer session at the end.

If you could include the name of the presenter you would like to answer your question, that would be great, just so we know who to address the question to. You enter your question into the question box and you select "send" and that'll send us the question.

Next slide.

Slide 6: Optional Feedback Slide

Lauren Pederson: At the end of the meeting, we'll have an optional feedback – an opportunity to provide optional feedback, a pop up window will appear once you exit GoToMeeting. And please take a few minutes to respond to these questions and provide your feedback.

Next slide.

Neelam Patel: So great and your feedback will also help us formulate future Webcasts. So it definitely provides us with information that you think you and other local governments can benefit from.

Introduction to EPA's Local Climate and Energy Program

Slide 7: U.S. EPA Local Climate and Energy Program: Goals

Neelam Patel: So just a few slides about your host – our program, U.S. EPA Local Climate and Energy Program. We try to help different types of communities reduce greenhouse gas emissions while achieving a number of different goals. And at the bottom of the slide, you can see that climate actions can result in a number of benefits; air quality improvements, cost savings, energy security and reliability, public health and economic development and quality of life.

Slide 8: Local Climate and Energy Programmatic Elements

Neelam Patel: And by focusing on not only the greenhouse gas emissions to improve or reduce – I should say – reduce your greenhouse gas emissions, you can also help achieve other community priorities. And so, we, through our program, have a few key elements in which we try to help communities achieve greenhouse gas reductions.

And the first is by providing Climate Showcase Communities. These are communities that document their results from their climate mitigation programs. And they have innovative approaches that can – that other communities can learn from and replicate in their own communities. And we're lucky enough to have Aaron Milano from Durham, one of the Climate Showcase Communities on the line today.

The next program elements are our guidance and tools that we offer. The first one listed here is our Website and pretty much everything you see in today's presentation is available on that Website, so I won't go into it. But please do visit it when you get a chance.

Another key resource that I'd like to point out are our local government climate and energy strategy guides. And this is a number of guides – up to 15 different guides – that focus in on how to develop programs in five key areas; energy efficiency, renewable energy, community design, transportation and waste and materials management.

And the last key element of our program is peer exchanges, making sure that you're learning from other local governments. And there are a number of ways we do that including these Webcasts.

Slide 9: Upcoming Webcast

Neelam Patel: And before we get into more details about today's Webcast, I would just like to bring to attention our next Webcast which is going to be hosted on January 18th in partnership with EPA's Green Power Community Program. And you can learn more about Green Power – the Green Power Program, opportunities to use green power and hear from communities that are doing it.

Poll Question #1

Slide 10: Evaluating Progress of Climate Actions: Poll Question

Neelam Patel: So I'd like to go ahead and dive into today's topic, now that I've talked a little bit about us as the host, which is evaluating progress of climate actions. And to begin with, we're going to start with a poll question that will help us get a sense of where you are in climate action planning, implementation or evaluation and measurement. So please take a moment to do that. OK.

So, Lauren, if you can go ahead and put those results up on the screen.

Lauren Pederson: All right, the results are up and 33 percent haven't started a plan, 48 percent are establishing a baseline or are developing a plan, three percent have passed or adopted a plan, five percent are implementing but haven't conducted evaluation or measurement and 11 percent are both implementing and evaluating and measuring.

Neelam Patel: OK. Great. Well, that brings us – brings me to, you know, one of our main messages and as you start on these endeavors of climate action planning, we really want to encourage the message of thinking about measurement upfront in the planning process. And then remembering that the effort you put in to the measurement can help you improve your programs and help you attain your goals.

U.S. EPA – Evaluating Progress of Climate Actions

Slide 11: When do I think about measurement during the planning process?

Neelam Patel: So with that, focusing in on the measurement piece and, you know, remembering that this is a follow up to our first climate action plan Webcast. Here in front of you, you see a framework which represents a comprehensive process for planning. And we recognize that this is the ideal.

You know, all of these things do not happen in order but they will happen as appropriate in your community. You'll hear today Austin talk about how they used a version of this and it was not in the same order as you see up here on the screen.

So just a few points, I'd like to bring to your attention the second one here, understanding greenhouse gas emissions profile which is very much similar to doing an inventory. You'll hear Santa Monica talk a little bit about the way they did a municipal inventory and a community-wide inventory. And what I'd like to do is move – from this overall framework and focusing on places where the measurement and evaluation pieces play a role.

So you should see, you know, we starred the places where measurement should be considered during your planning process. And it's when you're setting goals, when you're identifying, analyzing and selecting options to invest in, and then also when you're implementing.

So this is where you should consider measurement. And after measurement begins and you're at that bottom box you can take those results and visit – revisit your success in setting your goals, take a look at how you're doing your greenhouse gas inventory. And once you've taken a step there to do some analysis, you have the opportunity to go back and improve your program.

And so you come back to the program design, the implementation of that program, the funding of that program and then look at how you can measure better.

Slide 12: What kind of metrics should I analyze?

Neelam Patel: So just going in to what type of metrics should you be analyzing, you're definitely going to hear from our expert presenters that there are a number of ways to look at metrics and do analysis.

But what I'd like to just bring to your attention is two things that there – when you get to the project level, you can look factor by factor at the type of metrics that you use and you'll hear a lot of examples today. But then the other piece to think about is what additional benefits aside from greenhouse gas emissions can you look at.

And here you can see that with energy efficiency programs there are a number of different co-benefits, if you will, that you can analyze. And so energy efficiency programs can help you with direct energy impacts. They can help with energy system benefits, there are air and health benefits and also economic benefits.

Slide 13: Things to Consider

Neelam Patel: So here's a list of things to consider. I won't spend time going through this list right now because you're going to be hearing this information from all of the presenters. But it is for you to have as you work on developing your measurement protocols, your evaluation protocols; it is to help you while you're doing your planning. It is to help you while you're working with your stakeholders.

So, please, go ahead and save this and add it to your resources.

Slide 14: Contact Information

Neelam Patel: And here on our final slide, there are some additional resources that are available to you and contact people in our program if you do have additional questions.

Poll Question #2

Neelam Patel: And so with that, I'd like to just ask one final question about what you think you would be more interested in, and that is are you more interested in learning about qualitative or quantitative metrics. We'll take a second to answer that. And then Lauren, if you can share the results with us?

Lauren Pederson: OK. And 33 percent responded qualitative and 67 percent quantitative.

Neelam Patel: Great. Well, you're going to get a little of both of those things from our three – four presenters today.

Berkeley's Climate Action Plan: Tracking our Progress

Slide 1: Title Slide

Neelam Patel: So, I'm going to go ahead and turn it over – the microphone so to speak – to Timothy Burroughs from Berkeley, California to provide an overview of measurement and with examples from his experience working in Berkeley.

Timothy Burroughs: Thanks, Neelam. This is Timothy here. Can you see my slides up there on the screen?

Neelam Patel: Yes, we can.

Timothy Burroughs: OK. So thanks, Neelam, for organizing this and Dan, thanks for inviting me to participate and good morning to everyone out there on the phone or good afternoon depending on where you are.

You're going to hear from a few speakers today starting with myself and then my colleagues from Austin and Durham and Santa Monica about how we're collecting data that helps us monitor and report progress toward our greenhouse gas reduction or other sustainability goals.

And I'm going to start off with a higher level presentation that explains the value of tracking progress metrics and provides some guidance for doing so. And then Austin and Santa Monica and Durham are going to build on my remarks for some additional specificity and some examples from their own communities.

And I wanted to echo something that Neelam said, one of the things I want to say from the start is that the four communities you're hearing from today have been working on climate and sustainability issues for a relatively long time and have pretty robust climate action plans and systems for tracking performance.

But I hope one of the takeaways from today for you is that monitoring and reporting progress towards your sustainability goals is something that anybody – any community can do. And that every community should do in order to track progress toward any goals you set for yourself.

And you can choose whatever scale you do this work on starting small and getting bigger and bigger from there.

Slide 2: Map of Berkeley Area

Timothy Burroughs: So real quick, here's where I'm sitting in Berkeley, California just across the bay from San Francisco. We're about 112,000 people, home to UC Berkeley which is our largest employer and also Lawrence Berkeley National Lab and lots of other really fun people.

Slide 3: My Purpose

Timothy Burroughs: Here's my purpose for the next 15 minutes or so, one is I want to communicate the value of tracking progress metrics. It's something that can take some time, some staff time and so you want to make sure that whatever you're doing has value if you're going to be putting some effort into it. So, I'll provide some guidance there. I want to suggest a way to categorize or organize progress metrics, the way that I suggest is not a universal way of categorizing metrics but it's been useful to me here and so I'll run that by you.

And then outline some criteria for choosing effective progress metrics for your climate action plan or your sustainability plan. There are a lot of things you could measure so I'll outline some criteria that provide some guidance on maybe what you should measure. And hopefully I'll be able to illustrate all of this with some examples.

Slide 4: Climate Action Plan Goals

Timothy Burroughs: So here in Berkeley this all starts – our effort to track sustainability progress and climate progress starts with our climate action plan which was adopted in 2009 although we had an earlier version that was created in the – in the 90s. And through that plan, we set a target of reducing community-wide greenhouse gas emissions by 33 percent below 2000 levels by 2020, and 80 percent below 2000 levels by 2050, and the climate action plan is designed to achieve those targets.

But the question I have or I had when we were developing this plan was how are we going to know if we're meeting these targets. There are a lot of goals in this plan, a, you know, 200 or so page PDF document. There are a lot of goals in there and recommendations that could very easily get lost.

You know, I wish that the climate action plan was on everybody's bedside table, but I highly doubt that's so. And because it's not, it's important for us to pull some of the goals out of this PDF document, communicate them in a way that's more easily accessible and then communicate progress toward those goals, which creates some accountability for achieving the targets in the plan.

Slide 5: Value of Tracking Progress Metrics

Timothy Burroughs: And so that leads me to my next slide, which is an overview of the value of tracking progress metrics. So one is, like I just mentioned, improving accountability by demonstrating the status of progress over time, tracking progress toward the goals you've set for yourself and your climate or your sustainability plan. A lot of that, like I said, can get lost if there's not some system for creating some accountability and transparency in terms of how you're achieving your goals.

The other – another value of tracking progress metrics is it provides a way to generate interest in your local sustainability effort for your various audiences. And for me, my audiences are the community but also the city council, also funding agencies that provide us funding for our program, and the news media. And metrics – developing progress metrics enabled me to provide information to all these audiences and helped them stay engaged in the local sustainability effort.

Progress metrics also enable improved management of our projects and programs. So, for example, that program to reduce fuel usage in your city fleet or that program to save electricity consumption in City Hall. Implementing strategies to do those things, the only way you know whether they're working or not is to measure progress over time.

And as you measure progress and report on various metrics, then you can provide leverage or support for your existing strategies or for changing course. So if I'm measuring fuel consumption in my city fleet and I've just implemented a program, you know, maybe to limit idling or something like that, and I want to see if that program is working, and I see, oh, yeah, fuel usage is going down significantly. And if I can attribute that to that strategy, that anti-idling strategy, then I can gain more support for doing more of that because it's working.

But it also works the other way. I mean progress metrics can show that a given strategy isn't working and create an incentive to do something different or to change course.

So I'm going to provide a couple of examples that help illustrate all of these points here, so keep these points in mind as I go through a couple of these examples and I'll sort of refer back to this.

Slide 6: Tracking Building Energy Use

Timothy Burroughs: So what you're looking at here is a metric designed to show energy use trends in Berkeley's residential sector. It shows a 10 percent reduction relative to our 2000 baseline in residential energy consumption, that's including natural gas and electricity consumption. That red line is our baseline and the dotted black line is our target line going out to 2020. It illustrates a 33 percent reduction below our 2000 baseline.

I receive these energy data from our local utility about once a year, in Excel, and we use these data and we create charts from those data and we communicate them to the community and to lots of other audiences through our Website.

So why – what's the value of reporting this metric? Well, thinking back to the slide that I showed you, one is that it improves accountability so our climate action plan calls for a reduction in energy consumption in the residential sector, 33 percent reduction. We don't know whether or not we're achieving that goal unless we measure it and report it over time. And so that's one of the reasons we report this metric is for the purpose of accountability.

I also mentioned, you'll remember, that metrics can provide a way of generating interest in the local climate action effort. So I use these data to – these data were the basis of a press release

that I actually just wrote recently, that went out to the community that highlights this reduction. It explores the reason why this trend might be going the way that it is, what's driving this trend.

I included in the press release resources for how residents can get involved and reduce their own energy consumption. And I used the same info in a report to city council to report progress to them.

So having this data handy, putting in a little bit of effort to communicate it in a way that makes sense, it makes it very easy to plug it into an outreach document or a press release or to report to council.

And these data might also be able to help me advocate for our current set of strategies that may be helping to drive this trend. You know, we have a reduction in residential energy consumption so it's positive about that. That last bar in 2010 shows that we're actually still above our target, though, so that provides me with some leverage to reach back out to the community and the council and say we're doing well, we're achieving a reduction but we have to achieve more. And all of those messages are possible because we have the data and we can use it to communicate that.

Slide 7: Tracking Bike Parking Project

Timothy Burroughs: This next one is another example of something we're tracking at a project level which is how much bike parking we install annually. This is another strategy in our climate action plan to expand bicycle parking throughout our community.

So this chart you're looking at shows the number of bike racks installed per year, so it's not cumulative, it's the racks installed per year and the spaces associated with those racks. We have a strong local bicycle community here that advocates for more bicycle parking.

So we need to be able to communicate to them, how many rack and spaces we're putting in per year so there's accountability there. We can also use this information, and again, in the form of a press release or a council report, I can plug this data into communications like that and show definitively the work we're doing on this specific project.

Slide 8: Categories of Progress Metrics

Timothy Burroughs: You'll notice that the two metrics that I just showed you were measuring progress at different levels. So, for example, the residential energy use metric is a high-level metric, it's what I refer to as a system-level metric that measures the overall impact of a combination of strategies.

So there are lots of different things that affect residential energy use. There's a local economy, there's all of our programs and projects that go into reducing that energy use. And that metric, that high-level metric is measuring the overall trend of residential energy consumption.

Many of the people on this call may be in the process or have developed a greenhouse gas emissions inventory. An inventory is another example. You could refer to that as a system level metric because one of the roles of a greenhouse gas emissions inventory is to measure total community-wide greenhouse gas emissions over time at an aggregated level. And when you take that inventory snapshot year after year or every couple of years, you're establishing a trend for total greenhouse gas emissions within your community.

With that being said, it's important to remember, and I think that a couple of the other speakers will hit on this as well, the inventory does not capture everything. It does not capture all of the emission sources within your community. For example, it doesn't capture the emissions associated with consumption of products. Some inventories don't capture the emissions associated with solid waste.

So it doesn't capture everything, it's one tool among many that we use here to measure greenhouse gas emissions at an aggregated scale. The other thing about an inventory is many of the strategies you might undertake in your community to reduce emissions may not show up in an inventory.

So going back to that example of consumption, if you encourage more local food consumption, more community gardening, those are strategies that probably won't be captured in that greenhouse gas emissions inventory.

So it's important to conduct that inventory because it's a great policy tool and it's a way to measure things but there are lots of other ways to measure things as well and I'm going to go through some more examples right now.

The program level metrics, that would be an example of the bike parking one that I showed you. These measure the impact of a specific activity or a program like a bike parking program or a city hall energy retrofit or a program to increase composting in your public works building or something like that. Very specific programs measuring progress towards the goals within that program.

And then another way that I use to organize metrics is the milestones or status updates. So we have many recommendations in our climate action plan. We use status updates on our Website to communicate which of those recommendations have been implemented.

So a status update for me is something that illustrates its binary, it's yes or no, whether or not a specific action has been taken even if there's no quantitative data to report associated with it, it's more of a qualitative metric.

Slide 9: Status Update: Develop Grey Water Guidelines

Timothy Burroughs: So an example of that is something that we developed fairly recently. We have guidelines for helping our residents do grey water and rainwater harvesting in their homes and this was something that was very specifically recommended in the climate action plan.

And so we use our Website to update the community, you know, let them know you recommended this, we said we're going to do this in the climate action plan, and now it's done.

And when we tell them that it's done, we also provide other resources. Again, do a press release or up on our Website that helps them provide – that helps them get more information if they want to get involved and do something similar. This is an example of a qualitative status update that we have up on our Website.

Slide 10: Program-level Metric: Annual Net Tree Gain

Timothy Burroughs: Another example of a program level metric is one we tracked here, annual net tree gain over time between 2001 and 2010. So these data demonstrate the number of trees planted minus the number of trees that were removed, either they died or they were removed for some other reasons. So it's the net gain in trees over time.

And these data were something that our urban forestry staff were already tracking. They were already measuring for one reason or another, but it was on somebody's Excel's spreadsheet, on somebody's computer and nobody else ever saw these data.

And so now that we have a climate action plan and increased urban forestry and tree-planting as one of those goals, we're taking those data and we're communicating them more transparently on our Website and through other means.

And we have a specific tree-planting goal and this metric helps us measure progress towards that goal. So this is a program-level metric, again, measuring progress toward a very specific program goal around planting more trees.

Slide 11: System-level Metric: Total Waste Landfilled

Timothy Burroughs: And then another example of a system-level metric that we used here is total waste landfills. So tons of waste is the Y axis here, the amount of waste we sent to the landfill as a community, community-wide, every year, starting in – starting in 2000. And we have a zero waste goal by the year 2020 and we set that zero waste goal in 2005, which is why the target line starts in 2005 but you can also start it in 2000. I've done this a couple of different ways.

And this demonstrates how much waste we're sending to the landfill every year. We've achieved about a 50 percent reduction in the amount of waste we send to the landfill between 2000 and 2010. Again, this is something I think our community and our council should know and we didn't know this until pretty recently. This is something that was tracked by a couple of staff people and it never got beyond them.

And so now, again, we have a system for taking these data, updating them year after year, we get these data directly from our solid waste staff and from some staff at the state level that have this information.

Slide 12: Some Criteria for Choosing Effective Metrics

Timothy Burroughs: Really quickly, some criteria for choosing effective metrics. There are a lot of different things you could measure. For example, this is how much pie I ate last night. But this is probably something that you guys don't care about and it's not very important to measure.

Slide 13: Some Criteria for Choosing Effective Metrics (continued)

Timothy Burroughs: So what are some things that you should consider when figuring out what to measure? One, is that data have to be accessible, reliable and well-documented. If you're going to be putting data out there, it has to be clean, you have to know where it came from and be upfront about what you did to it.

Anyway, as you manipulate it, data have to be easily understood by the audience and clearly demonstrate what you're trying to communicate, demonstrate progress or lack thereof.

And another way of communicating data is normalizing metrics to illustrate the relationship between two variables.

Slide 14: Normalized Data: Annual Municipal Energy Consumption Per Square Foot

Timothy Burroughs: An example here is our municipal energy consumption data here, so this is energy consumed in our city buildings.

This is normalized, so you see the relationship between two variables, the red line is square footage, total municipal building square footage over time, and then we have energy consumption per square foot through the green bars.

Our total energy consumption is actually going up, but our energy consumption per square foot is going down which is important for us to know because then we relate that back to the programs we're implementing to help reduce that energy consumption.

Almost done here, a couple more slides.

Slide 15: Non-Residential Electricity Overview for 2010

Timothy Burroughs: We also work closely with our utility to help target our information. This is a very complicated slide. But if you look over to the right and you see those bars, that red line going across represents 80 percent of total electricity consumption.

And those colored bars recommend – or represent market segments, so the big blue one is schools within our community. The light blue one is bio-tech and so on.

I showed this slide because I encourage everybody on the line to work closely with your utility and other data providers to try and have a conversation about what data they have that can help you figure out what the main sources of energy consumption are in your community so you can direct services to those sources of energy consumption.

Slide 16: Who is Going to Do All this Work?

Timothy Burroughs: So who's going to do all this work? In Berkeley, I coordinate all of this work. I reach out to staff throughout the city, to our implementers on specific projects like our waste aversion staff and our transportation staff and so on, and work with them to pull data out of their resources and communicate it to the community.

Our information technology staff is very good at helping us organize and store our data. And I use a lot of interns from UC-Berkeley and from other local schools that can do – be a big assist in collecting data and organizing it in Excel, and like I said, work with key data providers like utilities to get these data and to use them effectively.

Slide 17: Takeaways

Timothy Burroughs: Takeaways, I think, number one, again, if anybody can do a lot of this, start small and maybe start with just your energy consumption data and track that over time. It's a way to figure out if you're making progress towards your goals and then make continuous improvement and also to raise the profile of your local climate action strategy or sustainability strategy.

Make sure you document where you got everything and anything you did to that data so that you don't have to reinvent that next year. And like Neelam said, track your co-benefits as well.

Slide 18: Contact Information

Timothy Burroughs: I'm going to wrap up there, I think I'm out of time and pass it back over to the EPA staff. So thanks and I look forward to your questions.

Neelam Patel: Thank you, Timothy. So that was excellent.

Poll Question #3

Neelam Patel: And just to hit on a point Timothy made earlier in his presentation, we'd like to get your feedback through a poll question. And the question is "What are your main motivations for measuring progress?" So, please take a moment to answer this.

And, Lauren, if you can go ahead and give us the results?

Lauren Pederson: All right. I think everyone should have answered this question by now.

Neelam Patel: Sorry about the rush to our participants.

OK. It looks like improving accountability by demonstrating progress came in as the top answer. Fifty percent of the participants thought that, that was, were motivated by that particular opportunity.

Also improving and informing project and program management came pretty high. So, that's great. And that will be helpful to us as we move into our next presentation.

Austin Climate Protection Data Management and Reporting

Slide 1: Title Slide

Neelam Patel: Timothy took us from the big picture, talked about the big picture to us. And now, we're going to dive into what Zach is doing with this back in Austin, Texas.

So, Zach, if you can go ahead and take over control with your presentation.

And while Zach is getting lined up, I want to encourage everyone to submit your questions online. We have a lot of experts available to answer these questions. So, please take advantage of this opportunity.

Zach Baumer: Great. Can you see the slides?

Lauren Pederson: Yes. We can see it.

Zach Baumer: Great. Thanks. I am Zach Baumer from the Office of Sustainability and Climate Protection Program at the city of Austin.

Today, I am going to talk about a much more detailed dive into what we measure, how we measure it, why we measure it, and kind of the details of data management and greenhouse gas inventories and climate protection tracking within the context of a city.

Slide 2: Outline

Zach Baumer: So, outline, first of all, maybe a little context and back story behind the climate protection program at the city of Austin. Then, I'll talk about what we report, who we report it to, when we report it, in terms of progress – in our reporting and in our reaching our program goals.

Then, next the details of really how we collect the data, how we calculate the emissions, how we do the reporting.

And then, finally, kind of wrap of with lessons learned from this process of implementing it at the city. And then, the future, kind of where I see this going at the city of Austin.

Slide 3: Our Process

Zach Baumer: So, the process – and this is what Neelam was referencing earlier.

The process that we implement here in the city of Austin kind of flows in this circular motion.

It was interesting to note when we were preparing for this Webinar that our numbers, one through five, weren't in the same order. And this is – this often occurs in different cities as they implement, in organizations and companies, is they implement climate plans because the context is always different. The situation is always different.

So, the process by which we've been moving forward here at the city of Austin is at first our city council set goals, passed the resolutions for a five-part climate protection plan for the city of Austin before a greenhouse gas inventory of the city was even done.

So, first, the city of Austin had goals set with our resolution that passed in 2007.

Then, staff was hired and folks started working on this initiative within the city in 2008. And the first thing that was done was the greenhouse gas inventory and reporting back on our baseline.

Then, we went through a process of analyzing that inventory as well as developing, building interdepartmental climate protection plans for now Austin Energy which is the municipally-owned utility as well as 28 buildings and departments within the city of Austin.

So, we have 28 separate municipal plans we're implementing across our organization.

Then, once these plans were set in place – most of these were signed by department directors by 2009. Now, we're in the process of implementation. We basically are working with the departments. The departments are working to basically implement transportation projects, energy projects, waste projects, water projects, that all relate back to our climate protection goals.

And then, basically, we manage that process as well as track the progress in terms of the projects that we're implementing that help us reach our goals.

So, most of the work that goes on now is in steps four and five. So, once we have our goals, the inventory, the baseline inventory and then our plans are set in place, we're mostly just working on implementation.

But as we finish plans, as multiple years go by, we kind of go back and check all of the different steps within this process.

Slide 4: 2007 City Council Resolution

Zach Baumer: So, what are the specifics of the Austin climate protection plan? You can find the full details of the 2007 City Council Resolution. So, basically, we have a very engaged environmental community within the city of Austin. They strongly worked with our city council to develop a very comprehensive and broad sort of a leadership plan for climate protection at the city.

This plan has five sections. You'll see the logos on here. The logos kind of yield who is generally owning the sections of the plan.

So, because we own our municipal utility, Austin Energy, they're owning the utility plan. The utility plan, the main part of that plan is that Austin Energy will develop 800 megawatts of energy efficiency as well as be powered by 35 percent renewable energy by 2020.

The home and buildings plan is around changing building codes and working with our green building department in Austin Energy to help new homes – new homes and commercial properties within the city of Austin eventually be net zero capable.

The next is the go-neutral plan which is an initiative to offer citizens and residents and visitors of the city to go carbon-neutral either through investing in local greenhouse gas reduction projects or purchasing carbon offsets.

The next is the municipal plan which is primarily what I am going to describe and talk about today in terms of our reporting. This is really the bulk of the work that me and my team focuses on. It is implementing these 28 climate protection plans and tracking the results of their implementation and how that affects our greenhouse gas emissions from city operations.

The final part of the plan is the community plan which is brought in and, basically, sets the stage for us to work within the community, within businesses to help reduce greenhouse gas emissions and do everything that the city can do in partnership with the community to create reductions.

Slide 5: To whom?

Zach Baumer: So, to whom do we report? So, on all these different plans, we have a lot of different stakeholders. And this is an important step when you think about in your community who you are going to report to. It's kind of the first step and the first question you need to ask before you start digging into, you know, what are we going to report.

So, first and foremost, the public. We report through reports that end up on our site, that are open to the public. Then, those feed in to the city council and boards and commissions. We report regularly on, sometimes, a monthly and quarterly basis to the resource management commission here at the city. And that's a public process where the public shows up to those meetings.

And we work with the commission and work with the public to basically give them updates with what we're doing. We provide annual updates to the city council whether it's through a PowerPoint presentation at the city council meeting or, you know, a full-length report.

We, then, also are responsible to report internally. Because we are part of the city government, we report to the City Manager, in the City Manager's Office, as well as department directors and then department green teams. Because they're – those two last levels are really getting into the nuts and bolts of really what's been implemented and how we're tracking results.

Those two also feed in with the fact that the way our plan is implemented and is designed to be overreaching across the city. But my group doesn't have the money and the budget to implement

all those projects within city departments. But we do have the resources to collect the data and to report progress on everyone's behalf.

So, it's up to the departments to implement the projects. We will help them implement projects within their departments. But because we don't want to have 28 people doing climate – doing greenhouse gas inventories, we centrally collect the data and centrally report back to these departments sort of on their behalf to help them in their implementation.

Slide 6: What do we report?

Zach Baumer: So, what do we report? We report basically two main things. And this fits with some of the topics that we're mentioned in the previous presentation.

The first one is our annual carbon footprint. We calculate our greenhouse gas inventory or carbon footprint on an annual basis. We report the total across the city operations. In a couple of slides, I'll show the graphs basically of these trends and of these totals.

But we report the total plus the trends, from our baseline of 2007 into the future.

The data is broken down into vehicle fuels, electricity, stationary combustion, water and waste which include scope one and scope two emissions and a little bit of scope three emissions.

We report this data not only from the community from a basis of the community, a basis of city government operations, city government operations including Austin Energy and power plants that we own. But then we also then slice and dice this data between every single department.

So, we take the whole greenhouse gas inventory of the city and divided it by all the different departments based on which vehicles they own and which buildings they operate so they can really see what their portion is of the larger pie.

We also report intensity and efficiency metrics because we have service delivery like water service, like electricity service, like police and EMS service. It's not always so simple just to say, we're going to reduce greenhouse gas emissions when you have equipment that is set in place, when people are demanding services, and emissions a lot of times, with electricity and fuel usage, are directly tied to service.

So if we have more police calls, well, we have to make those police calls. And that is going to naturally use more gasoline in police cars.

On the other side of reporting, we also report the implementation of our actions.

So, within our 28 climate protection plans, within all our different departments, we've basically outlined over 2,000 actions that these departments are going to implement.

So, we collect data on the projects, the information on the projects, the status of the action, the barriers, the schedule, the cost and the benefits, of every single one of those actions in a SharePoint database.

So, we work with the department so they can know – you know, if you're the Public Works Department and they have 200 actions that they need to be implementing, we help them figure out, "OK. We've completed 20 actions. Here are the 10 that we're going to focus on for next year and here's how much those actions are going to cost."

So, this helps with tracking implementation and planning for the future of implementation.

Slide 7: Inventory Boundaries

Zach Baumer: So, what are the boundaries for our greenhouse gas inventories that we calculate and report on?

We see it in sort of three buckets here, and there could even be a fourth.

So, on the highest level is the Travis County Greenhouse Gas Inventory. This goes beyond just the geographic boundary of the city to also include some of our neighbors and outlying areas within the county.

This inventory includes city operations, residences, highways, roads, any and all emissions within that are occurring within Travis County. Those emissions come to approximately 16 million metric tons.

This is probably the least accurate and the least specific of the inventories we calculate. We use high-level rollup data of all the electricity delivered, all natural gas delivered, all vehicle mileage that was recorded in research. So, this isn't very accurate. We calculate the Travis County inventory or community inventory every three years.

The next level down is Austin inventory. So, when we say city of Austin, the city of Austin owns a closed landfill. We own two and half power plants through Austin Energy. If you include the emissions from all of the different things that technically the city controls, that totals approximately 6 million metric tons. In this inventory, over 5 million of those metric tons come from city-owned power plants.

So, those power plants generate electricity that are used by the community and businesses. So, it's not technically government operations. It's much broader than just city government operations. But that number 6 million in the detail, we're very confident in the data and the detail and the accuracy of that number.

Then, the next level down is the – what my group and a lot of our climate action efforts are really focused on – the city of Austin government operations. And when I mentioned – when I say over

and over and over the 28 climate protection plan that are being implemented within all our different departments, this is that number.

So, this includes solid waste pickup. This includes the police department, EMS. It includes the water department, all the normal functions that most cities operate. And this number does not include Austin Energy and the power plants that we own.

So that number is approximately 220,000 metric tons. I mean, you could basically take that 220,000 circle and divide it amongst all the different city-owned properties and departments.

Slide 8: City of Austin Municipal GHG Emissions Summary

Zach Baumer: So, this is just high level trending. This is basically the example of the 6 million metric ton inventory and reporting on the trending that we do year to year.

We find it most useful to use stacked bar graphs so we can basically show what is included in the total. You can see here, the largest section here is power generation and delivery. The next is waste water treatment. The next, a good chunk of land-, closed landfill that we have. And then, transportation fuel use.

You can see over the last basically four years emissions have trended down in terms of the total emissions that include Austin Energy.

Slide 9: City of Austin Government Operations Consumption

Zach Baumer: This is a more detailed snapshot. And this is again the high level annual rollup of our city government operations. You can see the largest chunk here is from energy usage such as electricity and natural gas. Then, water usage and materials. And then, finally, vehicle fuel usage.

Again, these emissions have been sort of flat trending down in 2007. The estimate for 2011 and 2012 are reduced by very large amounts; because as many of you heard, the city of Austin started purchasing renewable energy for city-operated facilities.

So, in 2011, many of those facilities came online purchasing the renewable energy, in 2012 every facility will be purchasing renewable. And when we do that we basically apply an emission factor of zero to the electricity purchases.

Slide 10: SharePoint Data Analysis

Zach Baumer: The next, referring back to the earlier slide I talked about tracking individual actions and the sum of those actions, so this is just a really high level snapshot of what one of the spreadsheets looks like, but we're showing project status per department.

So this an example high level summary for, you know, one of our departments and shows basically the actions that they've completed, the actions that are in progress and the actions that

are deferred and the capital investment and the staff investment into those projects and then the savings in terms of dollar savings, greenhouse gas savings, water, electricity and waste. So this helps us not only track and report progress for the future but provides timely feedback to our department on our implementation.

Slide 11: Reporting Process

Zach Baumer: So what's our general reporting process? We follow The Climate Registry's local government operations protocol. In February and March we collect data through e-mails and phone calls. Through March and April we scrub that data, QA/QC it to make sure that it's all correct. We run calculations in Excel and our SharePoint data bases in April and May.

We go through verification in late summer and basically report back all of that information on an annual basis, later summer into the fall. This effort in all of this reporting basically takes one half to one full time employee.

So in Austin, we collect a lot of data and it takes a lot of time and effort and it's, you know, a college trained data expert who is on my team who does all this work.

Slide 12: Data from where?

Zach Baumer: Where do we collect all the data? We collect it mainly from internal sources because we own our power utility. We collect a lot of data from fleet services, from building services departments… But cities, basically many cities have this, are summary databases that collect all this information so we basically have relationships with the database owners across the city and work with them to collect all the data.

Externally we also have to have some relationships with the Texas Gas service as well as some other organizations in our community because they have data that we have to get from them, figure out what they do and the data that they have, collect it and then implement it and pull it into our calculations and inventory.

Slide 13: Lessons Learned

Zach Baumer: So what are general lessons learned from this process? First thing, develop an inventory management plan. Any time you're going to do a greenhouse gas inventory and want to do this and repeat it year after year, write down your assumptions, be decisive, use it as a reference and set boundaries and sort of have it as the, you know, the reference document. So if you do it one year, three years later you're not going to remember it if you didn't document everything and or if staff turns over, or if you use an intern you want to be able to have everything documented so that it can be replicated.

Build relationships with the data owners because you're going to have to do this year over year.

The city of Austin is a member, are members of the climate registry and we go through third-party verification. I know this is costly, it's too costly for many cities but we really find a lot of value in it and it really helps us to improve the quality of our data and the quality of our reporting.

And finally, leadership behind it is essential. You know, our city manager, our city council, our department directors want to see this data and want to know these answers so they provide us the resources that are necessary to give them the right answers so that's the key piece to this whole process.

Slide 14: The Future

Zach Baumer: So finally, where are we going with our process into the future? So the first thing is that we need to get rid of our spreadsheets. We have many very, very large, very, very complicated spreadsheets that are very prone to breaking and error and we need to eventually move away from these spreadsheets.

There are many competing solutions out there that can replace spreadsheets, none of these are cheap or easy but we're going to have to eventually take the plunge and invest in these programs or invest in some sort of solution that will help us move beyond spreadsheets.

The next thing we need is to also move towards dashboards. You know, right now all this information I talked about is only reported on an annual basis, and so, when, you know, when a department gets its data in July of 2011, this is looking backwards, you know, over a year and a half in terms of the implementation and seeing the results. So it's not super useful. So we need to move towards much more timely feedback, metrics and trends, be able to show stuff on a monthly basis so that they can know we implemented this project. Here's the result, here we can go to the dashboard and see it in a real time sort of effect.

And then finally we're going to be moving more and more – as we've been doing with this project tracking in SharePoint – moving to more of a focus on cost and benefits of implementing these programs and really showing the financial benefit of doing all of this so we get beyond only reporting greenhouse gas reductions just for the sake of the departmental benefit.

Slide 15: Thank You

Zach Baumer: So that concludes my presentation.

Neelam Patel: All right, thank you, Zach.

Poll Question #4

Neelam Patel: And I'm going to go ahead with the next poll question now.

We heard Zach talk about where they get their data. A lot of Austin's data comes from their, the municipal-owned utility, but in terms of the work that you're doing, our participants, what are your biggest challenges with the measurement and evaluation and feel free to choose a couple and I'll make sure you have enough time and I won't rush you.

OK take two more seconds to finish your answers. And the biggest challenge is staff time and data availability, interesting. Well I think one of the things to think about is how or even to especially ask our presenters of how they've managed to get information from their utilities, the good relationships that are required and the time required to build those relationships.

As Timothy said sometimes it's helpful to start with one area and then move to others as you progress.

City of Durham Neighborhood Energy Retrofit Program

Slide 1: Title Slide

Neelam Patel: So moving to our next presenter. As Zach was closing out his presentation he was talking about the future and how they can better approach data management and analysis and we have Aaron Milano talking about the data management solution that is being used in Durham, North Carolina.

So Aaron, if you can go ahead and fill us in on how you're managing this issue?

Aaron Milano: Hi, everybody. Are we showing out there on presentation?

Lauren Pederson: Yes.

Aaron Milano: Alright great. Yes, Zach left off perfectly actually. You see, that he used – his next steps are getting away from spreadsheets and that's a little bit of what we're going to talk about on how our neighborhood energy retrofit program, how we moved from a colossal – lots of different spreadsheets, a lot of different data repositories and moved to one centralized database to manage our data which makes reporting easier and make the whole process a lot smoother for everybody.

So the data that I'm going to talk about in this specific program may not exactly correlate with your greenhouse gas inventories but it is just to give you an example of how to plan and prepare for putting data into a centralized database and, you know, how to report that data and be more upfront about that.

Slide 2: Durham Energy Retrofit Program

Aaron Milano: So our energy retrofit program, one of its goals is to provide replicable climate change mitigation programs for other communities. Our program was funded both by ARRA and the Climate Showcase Communities Grant from EPA. We are targeting about 15 neighborhoods in Durham, North Carolina and we're performing 700 home energy retrofits.

Most of our data is – actually we're getting before data and after data. We're going to people's homes, door to door, collecting information on their energy habits, how – what types of energy they use, how they set their thermostats and then we're training neighbors to teach each other how to, you know, do their own energy savings projects and things like wrapping your water heater and stuff.

So we record all this information in the field. We put it in a database and later on when we're done with our program we hope to report and find some useful information on that. We've got

over 100 volunteers with a ton of volunteer hours and all of this is, you know, is basically building up a lot of data.

When we go into these houses we add insulation, we install programmable thermostats and we want to be able to look at that information and make something useful that the other presenters have already talked about earlier today. And then this will all tie in to our greenhouse gas reduction goals which were targeted to reduce by 30 percent from our 2005 levels by 2030.

Slide 3: Many Partners

Aaron Milano: So we have lots of data. We also have lots of partners which I'm sure many of you do as well. Within the city we have different departments, our involvement with community development on inspection, then with improvement services. We're working with Durham County. We are working with a couple of different non-profits like Clean Energy Durham.

We have temporary staff that are coming in to work on our projects but all these different people come in. And they have their programs they like to use. It means lots of different spreadsheets, databases and it basically means chaos.

Slide 4: Lots of Data + Lots of People = Lots of Confusion

Aaron Milano: So when we had lots of data and lots of people we ended up with a lot of confusion.

Slide 5: "Before" Screenshots

Aaron Milano: When we started our program, this is kind of what things looked like. You know, this is kind of supposed to be funny but this is real. We had Access databases. We had spreadsheets. We had Google docs. We had an inspection reporting software.

All these different things and, you know, this little piece here on the right, all these spreadsheets were going back and forth with house survey data, energy estimate schedules for our appointments and basically data was being lost, people were – you know, I wouldn't have the most up-to-date information and when I needed it if somebody called me about their home and ultimately we needed a better solution for that.

Slide 6: Our Solution

Aaron Milano: So what we did is we moved to a centralized Web-based database that was remotely accessible by all of our – all of our different stakeholders, all those different departments, non-profit partners, for-profit partners. Everybody has access to the centralized database via just a Website and you can log in just like you would to check like your e-mail account.

And the database did a couple of things for us. One, it centralized all that information so everybody always has the most up-to-date information but it also made it cleaner and easier to understand and get valuable information out of that data. You know, garbage in, garbage out.

If you have a bunch of data and it's all in all these weird spreadsheets it doesn't mean anything at the end of the day, but now we have it all in a centralized place that's easy to understand and I'll show you some screenshots here of what it looks like.

We're also able to automate reports which makes it, you know, really easy. For example when we have to report to the EPA for our climate showcase grant we can do automatic early reports, so that, say, there's a lot of staff time and additionally you can automate processes, you can get reminders about checking accounts or, you know, for us we use it to send automated e-mail for our participants.

There are a lot of different things that you can do with these types of tools. And the one that we selected, it's called LongJump and the website there is where you can get to it and I'll show you some screenshots of how we're using this data.

Slide 7: "After" Screenshots

Aaron Milano: So I mentioned before, you know, it cleans the data up. If you're used to using a spreadsheet or an access database that data is linear but in reality data is not linear. Information, you know, might be specific to this tabular information. So if you see here we've got all our data broken down in tabs.

So here's one participant in our program and we have the contact information and we have the door-to-door survey. We have the energy consumption data and the survey data, the cost share information. And if they leave the testimonial that we want to be able to track down later on we can pull all that and we can also pick these tabs and hide them from specific users.

So if there's somebody that doesn't need to see the cost share information we can take that out of there so that they're only looking at information that's relevant to them. And then down at the bottom I just got a screenshot here which is particularly important when you're working with the federal government. We are working with the EPA and we report cost share and that information then you see our ID number here with this little share box.

Basically any cost share can be related to a specific home in our database. You could think of this as a utility bill account being related to a building or something along those lines, maybe a business related to a – or a building related to a business or something, or more specific to your needs.

We are able to log all this information and we are also able to attach a PDF or an image, any type of file to stand as back-up for this type of information.

Slide 8: "After" Screenshots (continued)

Aaron Milano: Here's just another look at our survey data. It gives you a little more information, just to note a tab there.

Slide 9: "After" Screenshots (continued)

Aaron Milano: We also use this database to report, to run our inspection scheduling so any schedule processes we put a – our inspectors are getting automated e-mails and if they have to do an inspection at this time when they do it they come back and they automatically update this database and they'll enter in field notes so we have a clean track record of what happened, who visited that house and if there's ever any question about it we can – we have that information right in front of us.

Slide 10: Website Screenshot

Aaron Milano: You know some of you – some of the previous presenters they mentioned, you know, having inter-departmental information, different stakeholders putting in data. Here's an example of how we collect data into our database from our Website and this is how participants in our program they can come in here and enter in information and schedule an appointment. But you can imagine people entering in their solid waste metrics or their water use metrics for their building, the department director or assistant director or whoever is entering and that information goes directly into the centralized database.

Slide 11: Screenshot of Dashboard

Aaron Milano: Here's the screenshot showing also the dashboard. All of our information is up to date all of the time. So at any given point in time I can see how many homes have been completed and how many homes are in progress and how many homes have been rejected. You name it, I can find it in a heartbeat.

Someone asked me one day how many local aerators we've installed through our program and I was able to give them an answer within five minutes. And I don't know that I could have done that with all those nasty spreadsheets you saw a few slides ago.

You also see here the iPad. We are using an iPad now in the field to collect data when we're doing our initial site assessments. We can create the work order in the field and all that data gets populated directly into our database. So we don't have to – whereas previously we had pieces of paper that were getting lost and thrown away. You know you can imagine checking meters or something, that's something that you guys need to do, you know, really utilizing the technology that we have available to make our programs better.

Slide 12: Screenshot of Personal Dashboard

Aaron Milano: Here's another example of my personal dashboard. Everybody can have their own customized one, but I have access to my open cases, status overview of all of my participants, so

I'll have that in a glance all the information that's really pertinent that I need to know and take care of immediately.

Slide 13: Contact Information

Aaron Milano: In a nutshell, that's about it. Technology is your friend, you know. I'd definitely recommend using it and planning for it when you're establishing your inventories. And if you have any questions or, you know, interested to see a bit more, take down my contact information. I'd be happy to talk to you about his further. But that is about it.

Neelam Patel: Great. Thank you, Aaron, for sharing how you manage program level data for your Residential Energy Efficiency Program.

Poll Question #5

Neelam Patel: We do have a poll question to follow up from, follow up on Aaron's presentation. He presented about the tool that they used which was a cloud-based database, Web-based or cloud based on the new cloud technology, very cutting edge.

And I believe Aaron might have mentioned this but it is available for a fee and Durham has an arrangement with the organization. So we're trying to know what do you use to manage your data. So please take a second to answer this question – and a few more seconds before we get the answer.

So, spreadsheets is the most common response, and I think we heard from Austin and Durham that they were trying to evolve away from spreadsheets, so I hope that learning about the new cutting edge technology that's available can help you guys and our audience manage your data better.

City of Santa Monica: Greenhouse Gas Emissions Measurement and Reductions

Neelam Patel: And so now, what we'd like to do is go to Santa Monica who is going to take us back to big picture process information, what they went through in Santa Monica to develop their sustainability plan and then identify targets and indicators. So I'm going to hand it over to Shannon Parry.

Shannon Parry: Hi. Good morning and good afternoon, depending on where you are. Thank you to all the previous presenters. I think you guys have given a really robust presentation on greenhouse gas emission measurement and really the tools that we use to reduce emissions. I'm going to talk a little bit about Santa Monica's effort to both measure and, most importantly, reduce our greenhouse gas emissions.

My name is Shannon Parry. I'm the Assistant Director of the Office of Sustainability here in the city. Just to get you located the city of Santa Monica is located on the Western edge of North America. We're in Los Angeles County and we're sort of the western edge of what people consider the Los Angeles region. We have about 90,000 permanent residents.

Lauren Pederson: Sorry to interrupt you, but did you click the share screen clean screen from the drop down window, just so we can see the presentation? We are unable to see the slide.

Shannon Parry: There we go. Is that better?

Lauren Pederson: Perfect. Thank you.

Shannon Parry: You're welcome. So let's see if that's working. There we go. Is that better?

Lauren Pederson: Yes. Thanks.

Slide 2: Santa Monica Photograph

Shannon Parry: So this is the City of Santa Monica.

Slide 3: Santa Monica Profile

Shannon Parry: We have about 90,000 permanent residents. Something that's interesting to note and some of you probably deal with this as well. Although we have 90,000 permanent residents, we have 250,000 people in our community each day. So we have – our population increases by about 160,000 people each day and that comes from both our tourism population as well as our employment base.

Slide 4: Sustainable City Plan

Shannon Parry: So, the primary document that we use to manage our sustainable city efforts here in the City of Santa Monica is something called our sustainable city plan. And the sustainable city plan is the overarching umbrella under which all of our climate actions are encased.

And our sustainable city plan was created to enhance our resources, prevent harm to the natural environment and human health, and benefit the social and economic well-being of our community for the sake of current and future generations.

And I think it's really important to start out with this and with talking about measurement and monitoring because our emphasis is really on starting with the goal and starting with the goal that goes beyond being a green community and really has as its foundation an effort to be a triple bottom-line sustainable community.

Slide 5: Sustainable City Plan (continued)

Shannon Parry: A couple of things to know about our sustainable city plan. I think this is important because the city has been working at measuring and monitoring sustainability performance for about 20 years, so I think it's important to realize that we did start small.

Our original sustainable city plan was proposed by city staff and a citizen advisory group known as the Task Force on the Environment in 1992. Originally, we focused exclusively on environmental sustainability. We looked at municipal operations and we had about 20 performance based indicators that we were tracking.

And the reason for this emphasis on environmental sustainability is, number one, that was the nature of the dialogue in the 1990s but number two, it's where the most available data is, data for environmental indicators is available. It's reliable. It's useful and it's clear and – it's clear in terms of communicating to a broad audience.

Our other emphasis was on municipal operations, and the purpose for that is that's where we had a lot of organizational control and so we were able to demonstrate successes and we thought that that was important in building a community dialogue.

In 2001 and 2002, we went through a comprehensive update of our sustainable city plan and we expanded our emphasis from municipal operations to include the community as a whole, and we extended our focus from environmental sustainability to a truly three-legged stool approach of environmental, economic, and social equity issues. Now, we measure and report on about 80 performance based indicators.

Slide 6: Sustainable City Plan (continued)

Shannon Parry: When we're talking about our sustainable city plan, I think it's important to understand what it is and it isn't because I think it helps in understanding how we measure and how we report and what we're legally obligated to do.

Our sustainable city plan is a long-term city council adopted policy. It was developed separately from our general plan so it's not a legally binding document, but we do use our sustainable city plan and particularly the goals, indicators and targets that are established in the plan to inform the updates of our general plan, and this allows us to have both the flexibility of being accountable to adopted policy but then also the legal enforcement that comes with integrating the targets into the general plan element.

And then, finally, people always ask how do we fund our program? We're funded by enterprise funds, almost exclusively, about 90 percent of our program staff. We have 13 people in our Office of Sustainability who work on energy, water, sustainable procurement, green buildings, and sustainability. We have one full time person who is responsible for the measurement, data collection, measurement and reporting on the sustainable city plan.

Slide 7: Sustainable City Plan – Goal Areas

Shannon Parry: Our sustainable city plan has eight primary goal areas, and these are really the way we've operationalized the three legs of the sustainability stool. So we measure and report progress in resource conservation, environmental and public health, transportation, economic development, housing, open space and land use, community education and civic participation, and human dignity.

And you can see that one of the original poll questions was whether people are looking at qualitative or quantitative data points. And we have qualitative and quantitative data points in each of these goal areas. People often think that the community education and civic participation or human dignity goal areas are more predominantly qualitative, but we do try to have a mix of data points throughout each goal area.

I think it's important to understand the structure of the sustainable city plan because as the previous presenters noted, we each have a different process. For the City of Santa Monica, we really look at setting goals, doing our inventory, collecting data, analyzing that data, reporting and planning out, prioritizing our implementation, and then tracking our progress.

Slide 8: Sustainable City Plan - Structure

Shannon Parry: And in order to do that, that emphasis is reiterated in the structure of our sustainable city plan and I'd like to think of this as what we call the golden funnel. And the guiding principles are really the top of that funnel, the wide opening that invites everybody into the sustainable city plan. We have 10 guiding principles and I'm actually going to go through a slide that will contextualize this for you.

We have the eight goal areas which I just took you through. And then each goal area has one or two goals that provide a detailed vision for community sustainability in that area. So you can imagine that our goals in resource conservation are different than our goals in human dignity or land use.

And the basic foundation of our sustainable city plan relies on these last two things, our indicators and our indicator targets. This is what takes us from a measurement tool to really a community action and engagement tool. This is what really allows us to drive progress. Our indicators measure progress towards our goal and our indicator targets help with driving the implementation.

Slide 9: Example – Goal, Indicator, Target

Shannon Parry: Let me give you an example. One of our guiding principles would be that environmental quality, economic health and social equity are mutually dependent. One of the goal areas that we would look at would be resource conservation and our goal would be to decrease the consumption of materials, water, energy and fuels.

One of the indicators that we might use to measure that would be total citywide water use. But we don't just want to look at total citywide water use; we want to have a performance based target that has both a quantified reduction as well as a date by which that reduction is to be achieved because that really drives our implementation.

So that target, those indicators and targets, that's really the key element and something that I would really encourage people to think about and look at developing.

Slide 10: Open Space and Land Use

Shannon Parry: I'll show you how that works out in practice. So we'll look at this open space and land use goal area. Our goal here is to develop and maintain a diverse open space system that supports our community as well as to create mixed-use urban villages.

So utilizing our indicators, we can get a number of important data points. We know that there are 245 acres of beach in our community. We know that there were 26 parks in 2010. We know that the number of trees citywide has grown by two percent, and our diversity has increased. We can also see that last year we saw a 25 percent increase in our total tree canopy. And we can also see that 90 percent of our residents live within a half park – a half mile of a park or open space.

And here is where I really wanted to demonstrate the value of not only having indicators or data points that you're tracking but having that indicator target, because the indicator target is what really allows you to write it down and make sure that you're driving performance in the most aggressive way possible.

A lot of communities may stop and say, wow, 90 percent of our residents live within a half mile of a park or open space – great. But our sustainable city plan target was for 100 percent of our residents to live within a quarter mile, and this led to this: when we realized that we were not tending towards our target and we weren't on track to achieve that, we went back to our council and we said this is what is happening in the community. This is the target that you set and

established in the sustainable city plan. These are three options that we are presenting to you to achieve this target. What would you like to do?

And they were able to allocate the staff time and resources to create an additional 10 acres of open space over the course of three years.

So that really shows you how not only measuring but measuring towards the target really allows you to mid-course correct and to leverage your staff and resources and around a particular goal.

Slide 12: Resource Conservation

Shannon Parry: The same thing for resource conservation. We have some great data points that we're looking at. Our waste diversion has improved to 73 percent. That exceeds the sustainable city plan target of 70 percent. Our energy use decreased by three percent over the course of the year, 19 percent of citywide energy comes from renewable sources, 100 percent of municipal energy comes from renewable sources. We have 183 residential solar projects that total 1.4 megawatts.

These are all great data points but we really want to think about the target. Even if these things are successes, our energy is – and energy use is declining, it's still higher than our targeted level. So that will allow us to go back to council and say we need more time, we need more staff, we need more resources, we need to change programs. And that allowed us to create our Community Energy Independence Initiative as well as our Solar Santa Monica program which are really specifically directed at achieving these targets.

Slide 12: GHG Indicator and Reduction Targets

Shannon Parry: Let's take a look at this framework for sustainable city planning with performance based indicators as it relates specifically to greenhouse gas emissions and climate action planning.

The city has two goals for greenhouse gas emissions. The first is the 15 percent reduction below 1990 levels by 2015 for our community as a whole, and a 30 percent reduction below 1990 levels by 2015 for municipal operations.

Slide 13: GHG Inventory Details

Shannon Parry: Just so you know the details of how we did our inventory because this informs the elements of our measurements and our climate action planning, we've done our inventories for 1990, 1995, 2000, and 2007. We used the ICLEI model for greenhouse gas emissions inventories. That's a sector analysis. We do the inventory for both our municipal and our community, and we have normalized the data for 1990 and I'll talk a little bit more about that on the next slides.

Slide 14: GHG Inventory Results: Community

Shannon Parry: In our community greenhouse gas emissions inventory in 2007, our emissions were 7 percent below 1990 levels. And this is primarily due to waste diversion, conservation, clean distributed energy and renewables. We still need to get 8 percent reduction between 2007 and 2015 in order to achieve our target.

Slide 15: GHG Inventory Results: Municipal

Shannon Parry: For municipal operations, this is one of those areas where I want to come – circle back around to the complications with measurement. Our Big Blue Bus is our municipal bus line. In 1990, when we performed our first municipal emissions inventory - municipal transit suites were included in the community profile.

Now, as management tools and measurement tools have progressed, municipal bus fleets are included in your municipal emissions inventory. So if we look at our emissions inventory without our Big Blue Bus with the same framework that we used in 1999, we reduced our emissions by about 13 percent. If we include the Big Blue Bus in the new measurement framework, our greenhouse gas emissions for the municipality have increased about 3 percent.

Slide 16: Measurement Challenges

Shannon Parry: So let's talk about that, what are the measurement challenges that we see – demonstrated by greenhouse gas emissions throughout the measurement process.

And the first is really looking at this idea of baseline data versus best available data. One of the previous speakers talked about the characteristics of effective metrics. The first is that the data is available; the second is that it's reliable; the third is that it's useful and the fourth is that it's clear.

And it's really true, you know, there is great value in choosing metrics that honor that. But even if you're doing an exceptional job of that, the measurement tools that are used over time are going to change; best available science, best available data are going to change the nature of what we're looking at or how we categorize it. And I think that's something that we should just – that we should know. The example for us is the Big Blue Bus.

Like I said, it wasn't initially included in our municipal inventory, but half of our total municipal emissions in 2007 come from the Big Blue Bus. When you're looking at measurement, I think it's really important to keep in mind that you measure what matters.

So, it's more important to know total energy reductions as opposed to number of CFLs installed or a number of LED lamps installed. But it's also really important to remember that some things that matter can't be measured and that's what we talked about here and making sure that we're finding that difference between sustainability and greenhouse gas emissions.

So looking solely at data and data measurement, the best way for us to reduce our greenhouse gas emissions would be to get rid of our municipal bus line. We would achieve our greenhouse gas emissions reduction target instantaneously, over night.

But it wouldn't really have the outcome that we are anticipating or that we would like as a sustainable community. So I think it's really important as you move through the measurement framework to create caveats for yourself to have a sophisticated dialogue where the data is trending one way – the solution that the data drives you towards is understood in a larger context of community goals.

In the interest of time, I'll just go through a couple of other measurement challenges quickly. One is vehicle miles traveled. The measurements for vehicle-miles-traveled is done at an aggregated level and so, individual reductions and vehicle-miles-traveled by city programs would be very difficult for us to see in our actual inventory – the same for green building. We've had enhanced performance but we've also increased our square footage.

Slide 17: Sustainable City Plan Measurement and Reporting

Shannon Parry: Just a couple of more slides on how we go from measurement to reporting and why. We've talked about why we have performance-based indicators. We've talked about how to develop them. But the question then is why do we report on this data? And the first and foremost is we ignore the things that we don't track.

Certainly, for us here, we've really wanted to develop an understanding of sustainability performance so that we could foster community dialogue around sustainability issues with other staff, with our city council and with our community organizations – neighborhood groups, Chamber of Commerce, etc. And this allows us to create a prioritized plan for action and then educate and inform decision making.

Slide 18: Sustainable City Report Card

Shannon Parry: We used two primary tools to educate and inform decision making. The first is our Sustainable City Report Card. This is a summary document where we take the specific indicator data from all 80 indicators and we aggregate that data up to the level of the eight goal areas.

And we give ourselves a grade. We grade ourselves against our aggressive target. And we give ourselves a grade of both the level of performance which is based specifically on the indicator data and then we also give ourselves a level of effort grade and that's based on the amount of available resources and regional collaboration directed at achieving the indicator target. This is really directed at our council members, at the community. It's more of the lay person's communication tool.

Slide 19: Sustainable City Progress Report

Shannon Parry: The other tool that we use is our Sustainable City Progress Report. And this is our online database where we report all of our indicator data annually. And what you'll see is you can drill down here all the way down to the Excel spreadsheet or database that we used to manage the data.

You'll see who the data contact is, where it comes from, an assessment of the quality of the data, its recurrence – everything that we used to do our reporting. And then you'll see a write-up on our actual analysis.

And that's really the summary of the way that we take our sustainable city plan and measure our performance in order to actually drive change on the ground.

Slide 20: Sustainability

Shannon Parry: In conclusion, I'll just share a couple of lessons learned, that I think – or have really helped us in our efforts. The first is just to have a baseline understanding that measurement is complicated and it's important not to get bogged down.

The way that we've done that is we have a – have a discussion with our stakeholders. And we make a decision about a particular indicator or particular form of measurement and then we just state that assumption and we go.

We don't go back and continually revisit. Should we include our airport in our greenhouse gas emissions inventory? Should we use 1990 as our baseline? It's really important to just state your assumptions and then go forward.

When you're deciding what to measure, make sure you measure what matters but don't rely on measurement alone to make important sustainability decisions. The fourth is to recognize that not all of the greenhouse gas emissions reductions strategies that are important elements of your community will show up in your inventory and that's OK.

And then finally, I just recommend starting small with an area where you can collect the data clearly, where you can demonstrate progress and move forward from there.

Thank you.

Neelam Patel: Great. Thanks Shannon.

Poll Question #6

Neelam Patel: And we are overtime at this point, so I just want to let people know that we are going to stay on and ask about two or three questions for our presenters, but we will also be providing written answers to the questions we don't get to and we will e-mail those out to the registration list for this Webcast.

So please submit your questions that you have for any of the presenters, even you can't stay online to listen to answers. And so we'll just stay online for a few more minutes – five to six minutes.

And to close out Shannon's presentation on Santa Monica, I just want to highlight that when Santa Monica first started, they focused on just a few program areas and municipal activities. And over the years, based on the success there, it was able to expand.

I'd like all the participants to answer the poll question that's on the screen. In your opinion, what is the most important element of success?

Let's take a minute to answer that.

And Lauren, if you could share those answers, please?

And it looks like government and community champions came in the lead. And we've heard that in our experience and especially on our first Webcast on climate action planning, so we appreciate that feedback.

Questions and Answers

Neelam Patel: What I'd like to do now is put up the agenda and have Lauren from ICF ask a few questions to each of the presenters. And again, if you've submitted a question and can't stay on the line, you will be provided with the answers in writing.

So, Lauren, if you can ask the first question, please.

Lauren Pederson: Sure. This first question is for Timothy from Berkeley, California. Does Berkeley have a separate citywide greenhouse inventory as opposed to a community-wide greenhouse gas inventory?

Timothy Burroughs: Hi. Yes, we have a greenhouse gas emissions inventory that measures community-wide greenhouse gas emissions. And then we also have an inventory for municipal operations, so I think – I think that's what the question was if I understand it correctly.

So we have an inventory of our city-owned fleet and buildings and of our community-wide emissions, our community transportation, building energy use in each of those major sectors.

And then as I mentioned in my presentation as well as having those big picture inventories, we drill down and measure lots of other progress metrics - about 50 different progress metrics that are more granular than the – than the emissions inventory.

Lauren Pederson: Great. Thank you Timothy.

The next question is for Zach from Austin, Texas. What are the pros and cons to doing 28 separate climate plans as opposed to an overall plan? And to what extent do the individual departments work together?

Zach Baumer: Well, I'm sure you probably need both. I mean if you really want to get full implementation, you've got to have an overall overarching plan, but you – it's hard to get in to too much detail into specific actions.

Having 28 plans is a pain. But in our structure and in many city government structures, it's almost necessary. I mean, silos are something that we love to, you know, hate but they're real and, you know, our departments function as their own organizations.

And they, you know, a lot of this – because of budgeting and they have their budgets and they spend their own money on what they want to spend their money on. So, it's almost essential that they're able to implement within their silo.

The challenge for us and this is where it's useful to have a centralized group, like our Office of Sustainability or our Climate Protection group is that we work across those department to

connect those groups, so we have monthly meetings. We have – our team has liaisons and we basically connect with each of the departments.

And it takes a lot of work to stay on top of the tracking, but we recognize that we can't implement it all ourselves and we need them to come along with us.

Lauren Pederson: Great. Thanks Zach.

And then the last question is for Shannon. A participant asked if the bus line was renewed, will there be an increase in the VMT in Michigan?

Shannon Parry: Well, that's one of those – yes, which is why in the real world we certainly wouldn't choose to close our municipal bus line. But the way that VMTs are measured in our air regions, there wouldn't be as dramatic an increase in VMTs from reducing the bus line.

And it's just one of those places where data is collected in different ways by different agencies. And for a lot of data, whether it's jobs, housing balance, or VMT or others, we end up with consistent data that is reported in the same way every year.

But because of the way the data is collected or the way that it's aggregated, it's not – it's not as relevant at the scale of an individual jurisdiction, especially for a jurisdiction of our size because we're only 90,000 residents – about 8.3 square miles. But some of the data, particularly transportation data and some housing data that we get, is done at the scale of the county. It is hard for our – for us to see the effects of our individual actions in that data.

Neelam Patel: Great. Thank you Shannon and thank you Lauren for asking the questions.

You know, as we close out on today's Webinar, I just want to remind you that we've had some leading national experts in local government on climate action evaluation and measurement. And so, as you reflect on today's Webcast, I would just ask you to remember that you can take pieces of information that these presenters have shared as you develop your own plans, as you implement your own plans and as you develop your measurement systems and gather and analyze your data.

So we hope that this information will help you advance your climate mitigation programs at the local level and please look out for written answers to the questions that we were not able to cover on today's Webcast.

Thank you for joining us and we look forward to having you on our next Webcast, January 18th, a joint Webcast between EPAs Greenpower Partnership and our program, your host today – the EPA Climate and Energy Program.

Thank you.

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