Webcast Agenda and Meeting Logistics

Slide 1: Introduction Slide

Operator: Good afternoon. My name is Cathy and I will be your conference operator today. At this time, I would like to welcome everyone to the Ways to Beat the Heat Effective Approaches to Heat Island Reduction conference call.

All lines have been placed on mute to prevent any background noise. If you need assistance during the call, please press star then zero and an operator will come back on line to assist you.

I will now turn the call over to Neelam Patel, national program manager. Ms. Patel, you may begin your conference.

Neelam Patel: Thank you. I'd like to echo the welcome you just heard. On behalf of the EPA Heat Island Reduction Program and the U.S. EPA Local Climate and Energy Program, I welcome you to today's webcast.

My name is Neelam Patel and I am the national program manager for the Heat Island Reduction Program and also a climate analyst for local government as part of our local government climate energy program.

And I am forwarding to the next slide which is our agenda for today.

Slide 2: Agenda

As you take a look at the agenda, I do want to share our goals for today's webcast with you. We want to ensure that our audience today, on behalf of the presenters, we want to ensure that we help the audience that they understand the science impacts and benefits of the heat island and also reducing the heat island effect in your communities. We'll talk about the current and future temperature trends for heat island. And lastly, we want to demonstrate how communities have been taking steps to cool both air and surface temperatures based on the vocal geographic locations as well as the local priorities.

And so today, I'll set off with a welcome and introduction to the urban heat island effect in your programs. Brian Stone, from Georgia Tech University, will be talking about temperature trends in cities. And you may have seen from his work, he recently released a book, which you'll hear about, but also this has been cited in the Washington Post and other newspapers talking about what we can do to plan for extreme heat in cities.

Then we'll move into our case studies. Brendan Reed, from Chula Vista, will talk about the ongoing climate program and how Chula Vista has invested in cooling their community by focusing on adaptation being prepared to address the changes in climate.

He will be followed by Matt Grubisich, from the Texas Trees Foundation, an organization that is strategically planting trees to maximize the cooling effect while attaining other benefits, and he'll talk about how they've partnered with the City of Dallas to work together in their efforts.

And the last case study we have will be about the Austin Heat Island Mitigation Program. Austin has a number of diverse initiatives. Norman Muraya will talk about those initiatives briefly and folks on their cool risk program.

And as you see Texas is on here twice, one of the reasons is it's hot. But please keep in mind that in other regions of the country you can also feel the effect of the heat on community – excuse me – the heat island effect. It's just these communities have more advanced programs and lessons learned that can help develop your programs in your communities.

The last piece of our webcast will be a question and answer session. All questions will be answered at the end; you'll be submitting them in writing. And after the webcast is over, there's also an opportunity to provide optional feedback. This feedback is very helpful to us, and so through this feedback and also through poll questions that we'll be asking you after each presentation, it's so helpful to us because it helps us understand why heat is important to you and your communities and also we can do and provide to help you with the planning and implementation process. I want to turn over to Lauren Pederson to give you some information about the webcast.

Slide 3: About the Webcast and GoTo Meeting Software

Lauren Pederson: Great. Thank you, Neelam. You'll be muted throughout the webcast in order to minimize background noise. And you'll be able to submit your questions in writing and I'll go over that in the next slide on how to do it.

PDF and audio file of today's session will be made available at the following links and I'll send out a message on that on how to have these links. And throughout the webcast if you have any technical difficulties, please e-mail me at Lpederson@icfi.com.

Next slide.

Slide 4: Questions (GoTo Meeting)

If you have a question, you'll be submitting this to the question pane, and we're going to compile these questions throughout the webcast and ask them during the question and answer session. Please include the name of the speaker as they'll help us to answer each question. So just simply put question in the box at the bottom and click Send and we'll receive that.

Next slide, Neelam. I'll turn it over to you for the optional feedback.

Slide 5: Optional Feedback (GoTo Meeting)

Neelam Patel: Great. Thanks, Lauren.

As I mentioned in the beginning of the webcast, there is an opportunity to provide EPA and the other presenters with optional feedback. And if you can take a few minutes to provide us information on the position that you hold at your organization, what you found useful, and what you are going to do with this information after you get off the webcast, it would be very helpful to us, because that helps us help you with future initiative.

And with that, I'm going to go ahead and set off giving you some background on the heat island effect. And I do encourage you throughout my presentation as well as the presentations to submit questions as they come up.

Slide 6: What is the Heat Island Effect?

So I'd like to start off by talk about the heat island effect. I'm often asked, "Oh, where is this island?" And I think as most of you are familiar with the heat issue, it is not an issue that's surrounded by water. It's actually dealing with land coverage. And as you can see on this graph, there are certain materials and types of land cover that increase temperatures both air temperatures as well as the surface temperatures of the buildings, the pavements and whatever else may be covering your area.

These temperatures – when we had to define the heat island effect, one of the things we often say is that urban areas tend to be warmer, tend to be hotter than rural areas. And as of maximum temperature difference between these two areas, you can have temperatures in urban areas be as high as 27 degrees more, 27 degrees hotter than the surrounding areas. And oftentimes this temperature gradient leads to many other environmental issues, which I'll mention later in the presentation.

I think it's important, you know, as you look at this graph and see that they are the orange lines that represent daytime temperatures and the blue lines that represent nighttime temperatures. I think it's important to realize that the reason we invest in adjusting the heat island effect is often because of people's health and that nighttime piece plays a critical role and I'll talk a little bit more about that in a second.

Slide 7: What Causes the Heat Island to Form?

So going on to the next slide, the causes of the heat island effect, you know, from the last diagram you could see that where there's vegetation there is lower temperature and that's because of evapotranspiration. So when we these temperatures, it does get hotter. The other piece of this, I think Brian will talk a little bit more about this, is that people's activities increased the temperature in the air and buildings.

So for example, when we run ACs or when we drive our cars, we're adding heat to the atmosphere. And as I mentioned, the land cover that we have and oftentimes have been with vegetation that now has materials that hold heat. Oftentimes the buildings, you know, they hold heat which increases both the surface temperatures and air temperatures.

And then the last cause that I want to go through for what causes heat island is urban geometry and you'll see a diagram of this on the next slide.

Slide 8: Air Temperature Heat Islands

So here you can see that there are canyons between buildings and more densely their top areas and these are urban canyons. Well, often what's happening is the heat that's absorbed by the materials making up the building are reflected and released and then they are absorbed by a building next to them. And because of these canyons, there's little circulation or convection or wind that moves the heat away, and so that leads to increasing surface temperatures as well as air temperatures.

Slide 9: Surface Temperature Heat Islands

Here are some images to help display the increase in temperatures of surfaces. These diagrams are courtesy of Arizona State University. And these show that paved surfaces tend to have higher temperatures, and you can see the grids in the diagram where the surface temperatures are warmer.

Slide 10: Heat Island Dynamics

This next slide, urban heat island dynamics, is about the energy balance. And as you can see, there're a number of different factors, I don't want to spend a lot of time talking abut this, but the main message I want to get across here is that each community is unique. And it's important to understand these different patterns in your community.

So for example, how much energy is coming in, how much is contained within your community, your neighborhood and how much is going out and how it goes out. Sometimes that's transferred to the subsurface so you know underneath your buildings or underneath your pavements, in other cases it's going into those urban canyons. There is radiation of the energy in those urban canyons or it can be going out into the atmosphere. Well, that's one factor to consider when you are developing and trying to understand how to address the heat island effect or how to cool temperatures in your own community.

Slide 11: Nighttime Heat Island Temperatures

The other issue to think about is what those temperatures are during the night. Essentially, the nighttime temperatures have a significant connection to people's health. So if temperatures – traditionally temperatures cool down at night, but as places are getting hotter the temperatures don't cool down as much.

So you can see on this graph that in the past that 5 am there was a 10-degree Fahrenheit temperature difference, sometimes now we're not having that same magnitude of temperature difference. And so if your nighttime temperatures are not cooling down, that is a reason to think about addressing the heat island affecting your community.

Slide 12: Heat Island Impacts

So I want you to know we have heat and there are also other environmental issues that come from higher temperatures. So you know one of the reasons that we care about this is because most people these days live in cities, and the impacts of the heat island tend to affect the most vulnerable population like the elderly, the young, folks that don't have air conditioning, and as you can see, it affects human health. The higher temperatures, especially in the elderly, tend – can help quicken the onset of existing respiratory issues or health issues.

Also you know going back to the top of the slide, increased energy use in the summertime, energy demand increases, and there has been a study done by Lawrence Berkeley National Lab in the past, and this is maybe at least 10 years old so if there've been any increased temperatures we could see something different. But the energy demand in the summer is 5 to 10 percent of the energy's demand just to cool the heat island effect.

Also with increased energy use, there are also increased greenhouse gas emissions and air pollution. The hotter temperatures lead to increased ozone levels in some communities. And from a water perspective, the materials that lead to heat island effect, like the impervious surfaces, roofs and pavement, also increase runoff, some of the runoff goes in waterways. And the other element is that there is warmer water going in so the aquatic life is affected.

Slide 13: Mitigation Strategies

So with all that being said, you know, what can you do to address heat island effect? We come out with four basic strategies: trees and vegetation, green roofs, cool roofs, and cool pavements. And you can find more information about this in the appendix of this presentation.

Slide 14: Linkages = Opportunities

There are number of ways to integrate these mitigation measures, these cooling strategies into existing programs. And you'll hear about some of these opportunities through connecting heat island mitigation with energy, with other sustainability initiatives, with air quality initiatives, with storm water initiatives. You'll hear more about those through the examples that we have lined up for you today.

Slide 15: Scales for Implementation Strategies (helpful for measuring co-benefits)

So the other thing that you'll hear about in the presentation that I wanted to point out is that when you're thinking about how to use these implementation strategies, there are number of different scales. So in your planning stages, you can think about these from individual buildings, from the community level, your neighborhood, and of course the larger city level.

Slide 16: Methods/ Technologies for Measuring Temperatures (and co-benefits)

And as you move into the planning and designing of how you're going to implement strategies, there are number of different ways to measure the temperatures and co-benefits. And here are

just some examples oftentimes, and you'll hear this from Matt with the Texas Trees Foundation, it's helpful to partner with academic institutions to get this type of information.

Slide 17: About EPA's Heat Island Program

Slide 18: EPA Heat Island Program Overview

So a little bit about your host, about the EPA's Heat Island Reduction Program. What we try to do to this program is to increase the number of policies and program that have heat island mitigation measures. And like I mentioned, and you'll hear much of these case studies, there are number of different ways to connect. For example, Brendan Reed, what they're talking about is how they used the adaptation work that their community was doing to help cool their community.

Slide 19: EPA Programmatic Areas

There's a large heat island community and part of what we do is work across all those groups. Our programmatic areas include helping communities or states that are interested in decreasing temperatures. We help them by providing resources and that's the technical assistance level there.

We also have communications infrastructure where we provide newsletter. We do seasonal outreach and we partner with other academic institutions and other organizations to enhance outreach. And the last thing I mentioned is to increase the number of options available so you can implement heat island mitigation strategies.

Slide 20: Heat Island Program Resources

Here are lists of the resources that we offer. We have pretty detailed Website, account of events, a newsroom where we highlight stories about the heat island effect and this is across the country through all different types of publications. And we have a database of examples that you can check out. We have a compendium of strategies that is a written document that puts together a lot of what you're going to hear today. We have webcast; today's webcast will be on the Web site and past webcasts and a newsletter that gives information on the heat island effect.

Slide 21: Compendium

What I'd like to highlight here in the compendium is the chapter on heat island reduction activities. There are examples, voluntary and policy approaches, that you can use in your communities in that chapter.

Slide 22: Database: Recent updates

The database, we recently updated this in December of 2011 with the help of some students from West Georgia University. And we are always looking for new examples to add, so if you have

an initiative that you'd like us to include, please e-mail us either through the GoToMeeting or to our Web site.

Slide 23: About EPA's Local Climate and Energy Program

Slide 24: EPA's Local Climate and Energy Programs - Goals

And your other host for today, EPA's Local Climate and Energy Program. I'd like to just talk about some of the goals to this program, which tries to help communities, tribal governments, regional governments, cities and counties reduce greenhouse gas emissions and also identify partners to work with while achieving multiple benefits.

Slide 25: EPA's Local Climate and Energy Programs - Elements

And we have some key resources to offer. We have first the Climate Showcase Communities. And one community I'd like to bring to your attention is the Sacramento County. They have a river from a landscaping program, which looks at multiple issues including heat island cooling.

And then through this program, we have a number of tools and resources, documents that can help with different climate energy strategies. And there are several pertinent opportunities through this program.

Slide 26: EPA Contact Info

Slide 27-53: Appendices

And there is more information of these resources in the appendix. That's my contact information and, as I mentioned, we do have – this presentation does contain a number of appendices that can help you develop your programs.

Poll Question #1

Neelam Patel: So with that, I'd like to turn it over to our poll question that we have for you, which is to better understand why you're interested in the heat island effect. So if you could take a moment and checking all that apply to explain what your interest is in urban heat, and your reasoning may or may not be included. But if you do see something that you know would get people on board in your community please check that, that'll be great.

And then if we could see the results and if you could please share the results? And it looks like the most interest in urban heat comes from wanting to decrease energy use in the summer, which is great because it helps your community members save energy, and also from improving water-air quality and doing work related to climate.

All right. That sounds great. And I think that's a great lead up to the presentation we'll hear from Brian Stone. So Brian, if you can go ahead and talk about some of the work that you've done?