Welcome and Introduction

Slide 1 and 2: Introduction Slides

Operator: Good afternoon. My name is Janet, and I will be your conference operator today.

At this time, I would like to welcome everyone to the Keeping Your Cool, How Communities Across the Country are Reducing the Heat Island Effect. All lines will remain closed throughout the conference. If you should need any assistance, press star, then zero and an operator will come back online to assist you. Thank you.

I would now turn the call over to Ms. Victoria Ludwig. Ma'am, you may begin your conference.

Victoria Ludwig: Thank you. Good afternoon and good morning to everyone in the different time zones. Thank you for joining us today for EPA's webinar on the heat island effect, keeping your cool, how communities across the country are reducing the heat island effect. I appreciate you joining us especially since they understand there's an important sports game going on right now. So thank you, all.

We – my name is Victoria Ludwig. I'm the program manager for the EPA heat island reduction program which has been around since the early 2000. I will tell you more about that later, but the webinar that we're doing today is one of the many tools that we offer to states and local governments and non-profits and universities across the country to help them understand the heat island effect and mitigate the heat island effect.

So I hope that you learn a lot, and I'm not going to speak very long because I want to give most of the time to our presenters who are practitioners working with this issue on the ground and have some great success stories to tell you that hopefully, you can learn from. So quickly, I'll go over some – we will go – sorry.

Slide 3: Webcast Agenda

Victoria Ludwig: The agenda, as you can see, I will speak first that we'll have the practitioners from the cities of Louisville, Tucson and Los Angeles speak. At the very end, we'll do a questions and answers. You can type in your Q&A's during the – your questions during the webinar but we will actually do the sessions at the end.

Now, I'll turn it over to Wendy Jaglom with ICF Incorporated rated to explain a little bit about the logistics of how the webinar will work from the technology standpoint.

Slide 4: How to Participate Today

Wendy Jaglom: Hi, everyone. Thanks for joining today. On your GoToWebinar panel, you can open and close to that panel by clicking on the red box with an arrow as you can see on the

screen. Throughout the webcast, as Janet said, you'll be muted to minimize background noise. However, you will be able to submit questions and comments in writing.

If you have a question, you can use the GoToWebinar question pane, so please enter your question into the panel and hit send to submit. We will be compiling these questions and as Victoria said, we will ask them at the end during the Q&A session. When you send in the question, if you can please include the name of the presenter you would like to answer your question, that would be great.

PDF and audio files of today's session will be made available for download a few weeks after the webcast on the EPA state and local Website, and I'll send you all the links to the – to GoToWebinar so that you all have that. And if you have any technical difficulties throughout the webcast, feel free to contact me via e-mail at Wendy.Jaglom@icfi.com. The address is at the bottom of the screen.

And finally, at the end of the webcast, a pop-up window will appear when you exit GoToWebinar and we encourage you to please take a few minutes to respond to the optional questions and provide your feedback. It will help us inform future webcasts through the program. Back to you, Victoria.

Slide 5: What is Heat Island Effect?

Victoria Ludwig: Thanks, Wendy. OK, let's get started. I'm going to provide some basics of what the heat island effect is, what its impacts are and how it can be reduced. Starting off, the heat island effect is something that occurs in built-up areas, usually urban areas and because it's built up, because it's on urban area, it has oftentimes a higher temperature than the surrounding rural and suburban areas.

Research has shown that on average, for a city of about 1 million people, there can be a difference between the temperatures in the urban and the surrounding areas ranging from 2 degrees to 22 degrees difference. And actually, oftentimes, the higher temperature differential occurs at night.

This is the heat island effect. It – and it's caused by many things and it varies the exact temperature difference and the location of the heat island effect differs based on geography, topography, the season, day or night and there are differences in temperature in the air, as well as the surface. But in general, it's a situation where the urban built up areas are hotter than the surrounding areas.

Slides 6: What Causes the Heat Island to Form?

Victoria Ludwig: What causes it? The heat island effect as urban areas develop, vegetation and green areas are reduced in built-up buildings, streets, roads, those things increase and those are – that causes an increase in the temperature because without trees provided shade and releasing moisture into the air to cool the air, it causes higher temperatures.

And also, most conventional construction materials that are used for buildings and roads and parking lots, et cetera tend to retain the heat from the sun and they often store it. And then on top of that, geometry of how our urban areas are developed can cause the heat island effect because the geometry will cause what are often called urban canyons and this further complicates the issue because the heat cannot be released easily into the atmosphere because of the way it gets trapped in those canyons.

So it's the storage and the retaining of the heat from the sun, as well as heat from human caused, human materials like our air conditioners, our car engines, that also gets trapped in these built-up environments causing the heat island effect.

Slide 7: EPA Heat Island Impacts

Victoria Ludwig: Why do we care about the heat island? What are the impacts? It has several environmental impacts that I'll describe but also, there are human and social impacts, as well as economic. From an energy standpoint, because things are hotter quite simply, we have to spend more energy to cool them and you can see some stats here that EPA has collected showing that for every for example one – every 1 degree Fahrenheit increase in the summer temperature, you need to increase your energy demand by 1.5 to two percent more.

When the energy is coming from fossil fuels, this creates an increase in air pollutants as well as greenhouse gases. And just using more energy of course puts more pressure on our electricity grid, increases the peak period and has potentially impacts in terms of brownouts and blackouts.

The air quality in greenhouse gas emission impacts come from using needing to cool the urban heat islands more. One of the interesting ones is that it also increases ground-level ozone. Ground-level ozone is the bad ozone because when there's more of that, it's harder to breathe and people who have asthma have a harder time.

In addition to – there's some water quality issues and also, human health issues. You probably seen lots of newspaper articles over the years but what tends to happen is when there's a heat wave or an extreme heat event, the heat island effect makes that heat wave worse.

And the CDC recently released some information showing that between 1979 and 2010, the death rate as a direct result of exposure to heat was generally around 0.5 deaths per million people. So it is a very serious issue. It's a real issue and the heat island can increase those deaths.

Slide 8: Climate Change and Heat Islands

Victoria Ludwig: In addition to heat wave, we have climate change which has shown that there will be an increase in the number, intensity and duration of extreme heat events. So climate change is increasing the heat event, and then the heat island effect is exacerbating those heat events. So you have kind of an escalating process.

So they're interacting with each other, climate change, heat wave, heat island and causing the health and environmental impacts that I just mentioned. So if you try to reduce the heat island effect, you can also – you're also mitigating climate change and you're also adapting the climate change by helping to reduce your energy demand and improving the health of the residents and the quality of life in your city.

This graph is from EPA's new climate change indicators report which has a stat that from – I believe this is Noah that shows the increase in the number of hot days that are over the 95th percentile. The orange triangles indicate days that are hotter, and you see that there are quite a few of those. So just indicating the reality of climate change and how it's increasing temperatures.

Slide 9: Mitigation Strategies

Victoria Ludwig: But the good news is there are things you can do about the heat island effect. As an individual, you can do things but also as a community, you can do things. There are many things you can do but we will focus today on – I'm going to mention these four. These are the most common and the easiest for communities to implement.

You can plant trees and increase vegetation, green space, open space. You can install green roof on your commercial buildings and even houses. You can install cool roof and you can pave your roads in your parking lots and your sidewalks with cool pavements. I'll explain what each of those are and why they are beneficial. Each of these mitigation options has many benefits, environmental, social and economic and health – and public health wise.

Slide 10: Benefits of Mitigation Strategies

Victoria Ludwig: First off, trees and vegetation. When you plant trees and vegetation, you are reducing the need to cool the buildings in your city. That in turn reduces air pollution and greenhouse gas emissions. Trees and vegetation also sequester carbon. They increase the moisture in the air and they improve the quality of life overall in an urban area. They also help retain storm water and reduce erosion.

A green roof is something that involves planting either a small layer of vegetation on the roof or planting a full-blown system of trees and bushes but either way, you're increasing shade and you're helping to keep the air cool by releasing moisture into the air. The reducing of the temperature of the roof in turn causes less need for electricities and then you get all of these subsequent benefits that we've been talking about so far.

A cool roof is something that reflects the sun more so that it helps to cool the roof as well and this can reduce the amount of electricity that's needed to cool the building which in turn should lower utility bills. It also makes things more comfortable for the people in the building.

Cool pavements which can include many different things but in general, often are permeable pavements have many benefits especially in the area of storm water. It helps to reduce the of storm water that's flowing off into our waterways. An interesting side effect is that it can

increase the traction of cars because more water is being drained off the roads. This is a public safety issue. And then in turn, they also are cooler because they're permeable reducing the temperature in the area where they're located.

Slide 11-12: EPA's Heat Island Program

Victoria Ludwig: EPA as we're looking at this issue, we have had a heat island reduction program since the early 2000, and the goal is to work with state and local governments, non-profits, universities, all kinds of interested parties, the general public to improve – increase the amount of strategies that are being implemented the reduce the heat island effect.

Slide 13: Heat Island Program Resources

Victoria Ludwig: We encourage sharing of experiences, networking and we have technical assistance and tools that can help communities better implement the strategies that I just spoke about. Specifically, among other things, we have a Website which is chock-full of information that I would encourage you to look at. We have a newsroom where we keep track of the latest research and studies that have come out.

We have a database of case studies, examples of what communities have done in this regard. So if you're interested in learning about what's happening in your state, you can check that out. We have a compendium of strategies which is a guidebook that explains the basics of the heat island effect. It goes into detail about each of the four mitigation strategies I mentioned, and it includes examples of what communities are doing in terms of policies, laws, financial incentive, et cetera.

We have webcasts. Today is one obviously, and we have a newsletter that we put out every other month. You can sign up for that, no problem. Go to the address there. We will keep you up-to-date on future webcasts and also let you know about new studies and research and conferences and things related to the heat island effect.

Slide 14: EPA Contact Info

Victoria Ludwig: And if you have more questions, please feel free to contact me anytime. We're here to help. Thank you very much for your attention. Again, if you have any questions for me, please just type them in and we'll get to them at the end of the webcast.

Poll Question #1

Victoria Ludwig: Before we go further, before we go to our next speaker, we'd like to do a poll question which what you'll do is I'll give you a few minutes to answer and make a selection.

Wendy Jaglom: So the poll question should appear on your screen now and the question is which of the following heat island mitigation strategies are you most interested in learning about, trees and vegetation, green roof, cool roof or cool pavement? So go ahead and select your choice. I can see the answers are coming in now and I'll give you just a few more seconds to submit your answers and then, we will reveal the results.

OK, I'm going to go ahead and close the poll and reveal the results. And it looks like about a third of participants are interested in trees and vegetation, 30 percent in cool pavement, 20 percent in green roof and 17 percent in cool roof. So pretty even split across the board. And so that's our first poll question.

Victoria Ludwig: Great. Thanks, Wendy and thanks, everyone for answering. This is good feedback for us to help us guide our future activities.