

Question and Answers

Victoria Ludwig: Now, we'd like to start the Q&A session. I think we've been getting a lot so thank you very much. There are questions for each speaker. And so, I'm going to hand it back to Wendy to pose the questions to our speakers.

Wendy Jaglom: Great. Thanks, Victoria. So the first question is for Maria from Louisville. The question is what – was the tree canopy assessment a study of existing trees? If so, what metrics were collected? Tree species? Diameter? Or was it a plan on where to plant new trees?

Maria Koetter: Oh, I'm sorry. I was trying to unmute, can you repeat the beginning of that question ?

Wendy Jaglom: Sure thing. So basically the question was: was the tree canopy assessment a study of existing trees or a plan on where to plant new trees? And if it was a study of existing trees, what metrics were collected, for example, tree species, diameter, that sort of thing?

Maria Koetter: Oh, OK, sure. So the tree canopy assessment is currently underway and it's an assessment of existing trees, but it's not an inventory, so it doesn't give us species, diameter or any of that but it includes planting scenarios to bring our canopy up to tree planting timelines and scenarios, as well as locations to get our canopy to 30 percent, 35, 40 and up to 45 percent. So it really is a plan to increase our canopies.

We're right now around 27-ish. The central business district of downtown is only eight percent. So we have a long way to go .

Wendy Jaglom: Great. Thank you. The next question is for Irene and the person acknowledges that Tucson has planted 9,600 trees so far and they asked, have you done an assessment of the impact and if not, are you planning to?

Irene Ogata: Right now, we have not done an assessment. One is because they're scattered pretty much around the city. Even though we've tried to identify the target neighborhoods, they don't always end up there and we don't have a metric to measure the effect of the increased canopy.

We are looking at that right now on how to do that metric, and even looking at some of Dr. Sharon Harlan's data. Doing that assessment side could entail a lot of different types of equipment. So we're not quite sure about that one as yet.

Wendy Jaglom: OK, great. Thank you. The next question is for David. David, how cost-competitive are the products and materials, construction, et cetera for cool roofs, cool pavement and the like?

David Fink: Well, I guess in terms of the cool roofs, they're very cost competitive. You know I can mention, if you go to the Cool Roof Rating Council's website, you'll see that there are well

over 1,000 products that are available and in terms of pricing, you'll see that clay tiles, shingles are right in line with most traditional products.

There are some—sort of your cheapest asphalt shingles—you can get slightly below what the cheapest or lowest cost cool roof materials are out there but that's about it. It's a very small percentage. So it is very cost competitive.

In terms of cool pavement, this is sort of a new area. The materials we're working on, we don't have a cost estimate yet. We should actually have that within the next week. So I don't have a definitive answer on that but you know, it is like I said, sort of a new developing area and there aren't a lot of products available right now.

Wendy Jaglom: OK, great. Thank you. OK. So now, we'll ask a question of Victoria and the question is, when you say that there are strategies that can be adopted by property owners to mitigate UHIs, are there any studies on the affordability of these tactics and do you see policy or incentives ahead that will drive adoption of these tactics?

Victoria Ludwig: Good question. At the heat island program, we have tried to keep track of research that has been done and studies that have been done on the economic issues and also, we tried to keep track of where funding is available for these measures. And so, I do know that there has been some recent examination of this in many cities.

In addition to what David mentioned, we do have rebates and tax credits, and there are—the ENERGY STAR program does have some information on their website as well about cool roof products that are—that have tax credits applicable to them because they are energy efficient. So if you join our LISTSERV, you'll get information about the latest economic studies and things like that, that come out. But we are paying attention to that, it's an important question.

Wendy Jaglom: Great, thank you. So next, we'll do another question for Maria. Can you elaborate on the land cover assessment portion of the project? What resources or tools were used and was there any involvement with the USDA i-Tree tool?

Maria Koetter: OK. So the land cover assessment – OK, sorry, getting off speaker. The land cover assessment is where Dr. Stone is using high-resolution imagery and data from our GIS Consortium here in town. So we're not using i-Tree in that way. I have heard that there's something out there that's commercially available or that's available that I've just recently heard about called i-Heat, but we're not really using that either. I thought that was interesting though.

So yes, it's pretty much GIS information and data that we have, like I said, from our local Consortium and it's down to the two foot level resolution. So it's very accurate and it's very detailed.

Wendy Jaglom: Great, thanks so much.

Maria Koetter: Did that answer the question?

Wendy Jaglom: I thought yes, sounds good.

Maria Koetter: Great.

Wendy Jaglom: Sounds great. So next question is for Irene. Regarding the GIS tool that was used in Tucson, is this tool available for other areas and would it contain the data layers on census—in other words, on vulnerable population and tree cover?

Irene Ogata: I don't think – well, the layers that are available here on Tucson are of course very specific to this region only, but I think the census information, other cities could definitely use the same sort of data because that's just census data, but you would have to create your own map utilizing your own resources.

If you have a GIS person who would be able to link the census data to the mapping, that would probably really help. So on that one map of the Arizona Health Services, it has on there, the layers that they used from the census. And you may want to see whether or not those also apply in your community.

The other one is that same slide also had Sharon Harlan's link on there and you can read her report to see which elements she found affected those heat neighborhoods, besides low income. And I think that, for us, helped to drive some of that social justice data collection. And I think the Arizona Health Services also were basing that map on some of her data.

Wendy Jaglom: OK, great. Thank you. The next question is for David and I think you started to address this in your presentation but the question is, how does the city promote residential cool roof in areas where historic preservation requires dark shingles on metal roofing?

David Fink: You know the – I guess there are sort of two things. One if a city felt like there were a number of historic buildings, where that was a concern, that could be an exemption in the ordinance. And the other thing I would say is that because there are so many products now, that shouldn't be too much of a problem.

And I'm sorry, just real quickly, one point that I wanted to make that I didn't make earlier during the presentation was that the urban heat island effect in Los Angeles contributes to about 4 to 5 degrees of warming on average. And like I mentioned, in the middle part of the century, we're expecting 4 to 6 degrees of warming in Los Angeles.

So a comprehensive urban heat island mitigation plan that focuses for L.A. on trees, cool pavements, and cool roofs, and actually reduces temperatures, reduces the urban heat island effect 4 to 5 degrees. So if we – with sort of this comprehensive program, we can actually offset the warming that's expected in the later part of the century.

Wendy Jaglom: OK, great. Thank you. One other question for Victoria, apart from learning what different communities are doing, is there information on which approaches have been most successful in practice?

Victoria Ludwig: Like I said, it depends on how you define success. We tried to collect the case studies, as I mentioned, and then we did these webinars as a way for the communities to talk to each other and learn about how they were successful and what that means. EPA doesn't—we try not to really promote one strategy over another.

I would say each of those strategies that I mentioned as a mitigation option for the heat island effect has pros and cons. There are many—it's complicated in terms of estimating the economic success, and it also depends, I think, on what your success could mean, what your main priority is.

For example, because Tucson has water issues, success for them is going to be different than maybe in Michigan where they have plenty of rain. And so, it depends on what your community's priorities are, but if you read the compendium of strategies, you will learn what has been successful for the communities that we mention in there, and that I think can give you an idea of which ones have been the most successful, because some communities also do measure their success. They quantify the temperature reductions that have occurred, although that is a complicated thing to do, but they do also measure success in terms of the reduction in electricity use and consequent GHG reductions. So I think if you look at those case studies, you'll get a good idea of what might be considered most successful in general.

Wendy Jaglom: Great, thank you. So next, I'm going to ask a question for all speakers. So whoever wants to jump in and chime in first, feel free. So the question is: have any of the speakers done or know of scientific research showing or proving the air quality benefits of urban trees and vegetation? Also, have any of you dealt with the issue of trees that actually negatively contribute to ground-level ozone formation? So a question about air quality benefits – yes, go ahead, please.

Irene Ogata: Yes, so I know the one about that air quality and the negative benefits. There are negative benefits but trees and – I think it came out of – you know I was just reading that this morning. Although the study itself even from the i-Tree has come out that some trees do emit volatile organic chemicals, the VOCs and when they interact with the nitrogen in the atmosphere and the UV light, that it does turn into that smog.

So it's a bad air quality. Some of those trees are like oaks and eucalyptus and other trees, I think like ash and something else are less emitters so they're much cleaner and they do not emit that VOC into the air. But I always say, because we have a lot of oaks downtown is that you have to weigh the benefits of everything, it's not just the air quality but the shade, the heat and even this one article was saying, you don't get rid of those high emitters but just be more careful where you plant them.

So you don't want to plant a whole mass of oaks along the roadways where cars are also emitting the VOCs, and just be more cognizant. As our research and our data comes up and we're learning more, we just have to start figuring out how to work with that. I don't know, did that answer it, some of it?

Wendy Jaglom: That's great, would anybody else like to chime in?

Maria Koetter: Well, here in Louisville, we are in and out of attainment with our air quality constituents of concern. So I know that we have a direct correlation between heat, you know the temperature of the summer in our ozone alert days.

So you know, it's proven that obviously, heat is a precursor and contributes to the formation of ozone. So we here, last year was not so bad of a summer. So we were really lucky with our ozone alert days. We had fewer than usual. So we definitely keep an eye on that as it relates to air quality.

Wendy Jaglom: Great, anybody else want to chime in before we move on?

Irene Ogata: You know I'm just going to add another thing. I know there was that question about i-Tree. So if you do an assessment of your trees and you know species and size of the trees, the i-Tree does have a model in which it does generate the air quality benefits. So if your community wants to take that on, and i-Tree is – the software itself is to the USDA. So it's a free software that any community can use, you just have to learn how to use it.

Wendy Jaglom: Great. OK, the next question I'll ask is for David. Do you know – are there any practical studies on use of cool roofs to mitigate the urban heat island effect. I know of one, the reader said, I know of one study in Spain on greenhouses, but the rest of these studies seem to be computer modeled. Are there any real life studies now or any up-and-coming?

David Fink: Yes, I would point to work that's being done by a Dr. Larry Kalkstein out of the University of Miami. He's a synoptic climatologist and he's looked at several aspects and some of that data or some of that research being on how cool roofs or cool surfaces and tree canopies can reduce the number of mortalities during extreme heat event.

So he's done some really you know, important work in this area and I think, you know his work would be the best place to go to see that data.

Wendy Jaglom: Great. And then, our last question will be for both Maria and Irene. Are your cities looking at how a future climate resilient palette of these issues might differ from what has traditionally been appropriate?

Irene Ogata: I would say that it will change only because our climate zone is changing, that we are getting warmer. One, as I had said earlier about the VOC emitting trees, that we'll probably start looking at that, which ones are higher and how will we figure out on planting them. But also, some of the – because we're hot and cold sort of determines the viability of the tree, that we may have less trees that we have today that are a little bit more cold tolerant.

We may not be able to – well, they may change. The heat is marching upward from the South. So our – yes, the pallet would change but it may take a while to that.

Maria Koetter: Yes, we're definitely seeing that in Louisville as well where our hardiness zone recently shifted and we are incorporating those trees that you know 10, 20 years ago when they

tolerate our harsh winters. So yes, we are really trying to include that in the mix of our resourcing plans for sure.

Wendy Jaglom: Great, thanks so much. Victoria, shall we wrap up or would you like me to ask some more questions?

Victoria Ludwig: I think it's about 2:30. So we probably should let folks go. Thank you all for your great – those are great questions that you asked and thanks to our speakers for answering them very well. I want to thank Maria, Irene, and David again for giving us your time today and helping us learn from your experience. I think it was – it'll be really helpful to people.

If you would like to read the presentations again, go to the heat islands website and the address is up on your screen. In a couple of weeks, we will have audio transcripts of the presentations, as well as PowerPoints so that you can see everything again or pass them on to others. And one reminder again is please sign up for our newsletter to keep informed on what's going on with EPA and heat islands and to learn about future webcasts as well.

And I just thank you again for joining us on this day. As I said, when a very important sports event was happening, we appreciate that. Before you sign off, there will pop up some exit questions which we hope you'll answer to help us learn how we did and make future webcasts better.

So thanks again on behalf of EPA and our speakers for joining us. We really appreciate it, and we hope you have a good day. Thanks.

Maria Koetter: Thank you.

Operator: And this concludes today's conference. You may now disconnect.

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