
This document was created from the closed caption transcript of the October 5, 2021 City Council Work Study meeting and has not been checked for completeness or accuracy of content.

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CALL TO ORDER

[Time: 00:00:03]

Mayor Ortega: Welcome. I call to order the October 5th, 2021, city council work study session to order. City clerk, Ben Lane, please conduct the roll call.

ROLL CALL

[Time: 00:00:21]

Clerk Lane: Thank you, Mayor. Mayor David Ortega.

Mayor Ortega: Present.

Clerk Ben Lane: Vice Mayor Tammy Caputi.

Vice Mayor Caputi: Here.

Clerk Ben Lane: Councilmembers Tom Durham.

Councilmember Durham: Present.

Clerk Ben Lane: Betty Janik.

Councilmember Janik: Present.

Clerk Ben Lane: Kathy Littlefield.

Councilmember Littlefield: Present.

Clerk Ben Lane: Linda Milhaven.

Councilmember Milhaven: Here.

Clerk Ben Lane: Solange Whitehead.

Councilmember Whitehead: Here.

Clerk Ben Lane: City Manager Jim Thompson.

Jim Thompson: Here.

Clerk Ben Lane: City Attorney Sherry Scott.

Sherry Scott: Here.

Clerk Ben Lane: City Treasurer Sonia Andrews.

Sonia Andrews: Here.

Clerk Ben Lane: City Auditor Sharron Walker.

Sharron Walker: Here.

Clerk Ben Lane: And the Clerk is present. Thank you, Mayor.

[Time: 00:00:50]

Mayor Ortega: Thank you. The work study sessions provide a less formal setting for the mayor and the council, to discuss specific topics with each other, and with city staff, and provide staff with an opportunity to receive direction from the council.

PUBLIC COMMENT

[Time: 00:01:10]

Mayor Ortega: Now, to provide an opportunity for the public input, we allow six public comments on these topics. And make this time available so that we get some directions and comments from the public. Tonight, we had called for remote comments, seeing none. We do have one in person which is Natalie Chrisman Lazarr is who the chair of the environmental advisory commission. Please come forward. Thanks.

Natalie Chrisman Lazarr: Mayor Ortega, honorable councilmembers. Thank you for the opportunity to address you on behalf of the Scottsdale environmental advisory commission.

My name is Natalie Chrisman Lazarr, and I'm a resident of Scottsdale and chair of the commission. This is Steve Schlosser, also of Scottsdale, and a past chair of the commission. Did you know that for each 1% increase in tree and shrub land cover in Scottsdale, that there's about a little over half a degree reduction in land surface temperature?

Or that it takes only approximately 200 trees or shrubs per square mile to increase tree and land cover this is the type of Scottsdale data that Arizona State University Walton sustainability services has done to help you to show how sustainable Scottsdale will be in the future. Tonight during your study session, A.S.U. will present some very useful and tangible information that they have collected over the last few months. Moreover, A.S.U. and city staff will share with you some very well conceived and important recommendations for heat island mitigation in our city.

What I hope you will hear is that we now have evidence that there are some significant disparities in heat island effects across Scottsdale. You inherently know the consequences of heat in a municipal environment. High cooling expenses, high levels of pollution, and increase in heat-related illnesses and social discord.

What I hope you will do is act on the information and recommendations that A.S.U. is offering in their study. As chair of the environmental advisory commission, I have the pleasure of watching staff support development and strategies for a cooler Scottsdale. The study is integral to addressing where we are now, and where we want to be regarding heat island mitigation. As a commission, we support council's vision to contract with A.S.U. to advance sustainability in our city.

We support the recommendations brought forth in the study and we are enthusiastically in favor of moving forward with the tree and the shade plan for Scottsdale. With the work product you will review tonight and the forthcoming second volume, we ask that you promote real progress by developing impactful policies that increase tree canopy and shade, while identifying the disparities in tree canopy and shade that you will about tonight.

In short, please set in motion the planting of trees under whose shade you may never sit under.

As stewards of the city's limited resources remember that according to the arbor day foundation trees are the only part of our system that appreciates in value. There's no better investment in our local environment. Thank you.

ITEM 1 – URBAN HEAT ISLAND MITIGATION STUDY UPDATE

[Time: 00:04:58]

Mayor Ortega: Thank you. And we will be sure that your written comments are entered in the record as well. So we have two discussion items. In particular, the urban heat island mitigation study, and our presenter is Tim Connor, the environmental initiatives manager and David Hondula the Arizona State University professor.

Tim Connor: Thank you, mayor, council. We're pleased to be here tonight to share with you some of the findings that we have put to go over the past year plus. The study has been named identifying strategies for a cooler Scottsdale. We thought that was appropriate. I do have David Hondula with me tonight. He's with A.S.U. and he's a doctor as well. So he's definitely well-suited to do this work.

Tonight, tonight, we are looking forward to this presentation. We hope to get questions and hopefully provide you with answers and possible direction to staff is very much appreciated as well as to A.S.U. Next slide, please.

The intergovernmental agreement that was established in June of 2020 allowed us to create a three-year with the Rob and Melani Walton Sustainability Foundation. We started the first year with the heat island and I will go through that in just a minute. The contract is for three years with one-year scope of work with up to \$100,000 per scope. So next slide, please.

So why did we start with an urban heat island study? We had input provided by the Scottsdale environmental advisory commission, which is Natalie's commission. We also had record elevated heat during our summers and it continues to rise. The growth and the density in the anticipated Scottsdale growth areas are hopefully a way we can get ahead of some of those curves and finally the heat mitigation plan is linked into the 2035 general plan update and it's also listed in the implementation strategies for year one through five. Next slide, please.

We chose the Rob and Melani Walton Sustainability Solutions. They have access to all the different scientists and professors throughout the whole university. So this time we teamed up with the urban climate research center and that's what David is going to represent tonight. With that, I will turn it over to David Hondula.

David Hondula: Thank you, Tim, it's been a real pleasure on behalf of my A.S.U. colleagues to support the city on this important project and this has been a tremendous learns experience for us as well. For those of you who are familiar with the A.S.U. culture, applied research is highly valued by our institution.

This is the perfect type of project for us to engage with to hopefully help support your conversation but also create learning and educational opportunities at our institution. Next slide, please.

For a brief introduction to our team, that's me in the middle. We have some of my colleagues here as well, Bill Campbell who is our project manager, well Walton group and Mary Wright, the Ph.D. student in our geography program, who is really responsible for the fine analysis that's included in the report, our colleagues Jennifer Vanos and David Sailor are also part of project team. Next slide, please.

[Time: 00:08:51]

As you have seen in the report, our goal is to conduct a series of assessments that we think will provide foundational data to support the sustainability planning process that you will be undergoing over the next year, and really create a conversation around where the city might be headed with future activities to cool the city in the coming years.

We certainly imagined that the report and other products produced will support city staff, but also public education, and learning and engagement around this topic. The official project timeline ended in June, but we are still continuing some analysis from some projects that we conducted late in the summer that were inspired in part by staff and the SEAC and we very much appreciate engagement with them over the course of engagement and the kind words this evening.

It was divided on next slide, please into several different components including assessment of the microclimate, modeling, some which we already heard some results from and development of some mitigation and adaptation strategies for how the city might move forward. On the next slide, just some highlights of what you -- what the city has received or will receive. There's a technical report.

You have had your hands on first volume, and there's more on its way in a second volume. There's also a data package, every single data point we collected and analyzed over the course of the project will be available to staff. There's a public-facing story map which is what we imagine to be the engagement platform with the public to learn about what we have done and collect their input on how we might move forward as a city and then including tonight, there's been a variety of presentations to the staff, advisory commission and thankfully tonight council. As we move forward, we have about 20 slides that will provide some of the highlights from the report.

I suspect some of you have been deeply engaged with the report and others not so much. I hope this is a good overview but if we gloss over any details in this presentation, please know that they are actually available in the report that you have accents to, and we certainly welcome interruptions and discussion as we move through the slides.

To get us on the same page in terms some of the language that we'll use over the next few minutes together. We defined a few geographies. We focused on the growth areas in the general plan and they are McDowell road, if Scottsdale Road, and old found and greater airport. We wanted to have a way to compare those areas to other parts of Scottsdale. Scottsdale has a wide range of land cover types, mountain preserves and other areas. The whole of Scottsdale did not seem to us to be an appropriate point of comparison, which led us to come up with this intermediate geography that we call metro Scottsdale which is the teal-colored polygon.

This is not an official geography that appears anywhere in city documents, but we thought it was a useful point of comparison to understand how the growth areas compare to some of the neighboring areas. You will hear some analysis that's conducted at the census block group scale this is a geography in the hierarchy in the U.S. Census Bureau that is a smaller unit than a census tract and you will hear a little bit of analysis at the scale of individual parcels. We will use different types of air temperature.

We will talk about area temperature, which is the one we are most comfortable with, perhaps 71 in this room. We will talk about surface temperature, the temperature of the ground you were to put your temperature on the ground.

[Time: 00:12:15]

The pavement may be 150 degrees or 160 degrees Fahrenheit and we will talk about the radiant temperature which is the best metric for assessing how a body feels as we move through the environment.

If we move from standing in the shade of a tree to outside of the shade of the tree, the air temperature doesn't change very much, but we know we feel much more comfortable under the shade of the tree, which is blocked radiant. The radiant temperature captures that variability. Next slide.

In our presentation, again, interruptions are most welcome. We will highlight what the ultimate recommendations are and present some of the land cover analysis and some the land surface temperature data and show some pictures we have taken around the city and the visible and the infrared spectrum and then we will talk about specific actions that might be pursued as part of the sustainability plans or other actions as we move forward.

On next slide is a conceptual diagram that represents some of the conceptual thinking at A.S.U., about what it takes to what we are calling a heat-ready city if we were to characterized Scottsdale or Tempe or Mesa or Phoenix, as heat ready, what are the components of a heat ready city.

We don't have time go into all the different components, the document that we have on been working on together focused on part of the first box what with we call mitigation actions

strategies to keep the city cooler there.

Many actions such as adaptation actions strategies that keep people safe when it's hot such as operating cooling centers and weatherization programs could fit in that second column as well. And then this' another for a heat ready city internal actions.

One the mechanisms inside city government that are helping the city achieve the goals in the first two boxes. Well, all to say that while we're very excited to start this conversation with you about cooler Scottsdale today, there could be a much broader conversation in the years ahead. So what did we come to think about as part of this report? We tried to come to goals based on the data that we collected.

These are not the entirety of the possibility of goals for Scottsdale but these are the ones that we feel we can support based on the information we have been working over the past year. And I'm not sure they will come as any great surprise to any of you or any residents who are listening who are tuned in to heat challenges here in our region.

The goal number one is increase tree canopy and we can be collective in places where we increase the tree canopy. We need to reduced the dark asphalt and dark roofs and other hot surfaces and improving and increasing the number of pedestrian shade amenities through a wide variety of strategies there are some exemplar where we are achieving these three goals already but I think there are plenty of opportunities to do more of them and do them better.

One the ways we looked at the landscape in the city as we move forward to the next slide is using some aerial imagery that was collected as part of the long-term ecological research program.

[Time: 00:15:29]

It comes from an airplane that takes pictures of the spatial resolution of one meter and through subsequent analysis we can get a pretty good sense of what the different land cover types are in the city this product has been rated at 94% accuracy.

And as we heard alluded to in chairwoman Chrisman Lazarr's cents there's a wide range of land cover types as we move throughout the city and in particular in the three growth areas. The font on this slide may be a little small to see but focus on the difference in the height of those black bars. That's the percent that is covered by asphalt. In the McDowell Road/Scottsdale Road, nearly 50% is covered by assistance fault. That may seem like a -- asphalt. It really hugs the roadway network there.

It makes almost a perfect t following McDowell Road and Scottsdale Road. It's not necessarily a major surprise that there's a lot of asphalt there. We see more asphalt in metro Scottsdale and Scottsdale at large and we can talk more about these data, some of us might be interested in, for example, the tree and shrub and grassland cover types there on the top of the diagram.

We looked at maps to see how this land cover changes. You get a sense we won't look very closely at the details we won't spend much time doing so. We can see that there are places that have darker colors indicative of more trees, shrubs and more in the city. In the census block group, that's what these units are, these polygons on the map.

There's a census block group in Scottsdale that has as little as 6.5% tree and shrub land cover. And there are other places where you approach nearly 25% in the city, a fourfold difference in land cover from that particular type that we think is very important for providing tooling and a wide range of other benefits.

On the next slide we can see variability in other land cover types these are almost the exact opposite patterns that we saw before. Where do we have asphalt and where do we have building land cover in the city and tremendous variability and some census block groups more than 40% is covered by asphalt. We looked at this analysis at the parcel scale to highlight different examples throughout the city of where we see parcels that have a lot of particular land cover types and where we have a little. And we don't mean to pick on any particular individual property owner here. We are just highlighting examples.

This happens to be an example of a parcel in the city that has a very high percentage of its land area that's covered by asphalt and, indeed a large total land area of asphalt. This particular parcel which some of you may recognize, accounts for nearly 86 acres of building and asphalt, and as we look at this parcel, we see perhaps very little in the way of tree, shrub or grass cover.

[Time: 00:18:26]

Mayor Ortega: Mr. Hondula, perhaps this would be a good break point to see whether there's some questions and then we can move on in different chunks.

David Hondula: Yes, mayor, that would be fantastic. Thank you.

Mayor Ortega: Did anyone have any comments up to this point? I have a couple of them.

David Hondula: Please, we would be honored.

Mayor Ortega: What is the definition of waste heat and, you know, takes to generate tooling, we usually have this waste heat, but what is the definition.

David Hondula: Thank you for the question. I think that was a fine definition that you offered or a fine start of a definition, when we think about waste heat, we are thinking about heat emitted to the environment, from machines like vehicles like air conditioning units and others that literally add hot air into the environment.

So we're not necessarily, when we're thinking waste heat thinking about hot air above

pavement, for example, we are thinking about heat that's emitted from machines which has a measurable impact on the urban heat island.

So modeling studies for the Phoenix metropolitan area suggest that the use of air conditioning alone under certain weather conditions might account for more than a degree Celsius of higher night time temperatures just from the heat emitted from our air conditioning units.

Mayor Ortega: Thank you. Councilmember Durham has a question.

Councilmember Durham: Thank you, mayor. Can you explain again why you limited this study to what you have called the metro Scottsdale?

David Hondula: Yes.

Councilmember Durham: I didn't -- I didn't understand that.

David Hondula: Thank you for the question, Councilmember Durham. We were directed by staff with advice from the SEAC to really focus our study on growth areas. Namely they are where a lot of development has occurred in the past and where more development may be expected in the years ahead.

They are likely to be the hotter places of city. So we were certainly interested to look at what's happening in the growth areas and compare them to surrounding areas and the question we found ourselves asking is what do we compare growth areas to?

[Time: 00:20:32]

Is it fair to compare it to the completely undeveloped parts in northern and eastern Scottsdale, the mountain preserves or should we really focus on comparing these growth areas to otherwise developed parts of Scottsdale?

That led us to come up with this intermediate geography of metro Scottsdale. Which we think is a point of comparison for growth areas. It gives us some sense of what the metrics look like across the entire city, where we have some development already. Thank you, councilmember.

Mayor Ortega: Councilwoman Whitehead.

Councilmember Whitehead: Thank you what does A.S.U. recommend? I think that's general dynamic and we have -- the McDowell corridor, there's a lot of parking lots and that's what we are looking at.

So do you generally recommend -- again, these are private properties and the city has limited control. Do you recommend that they go gang busters and put covered parking with solar panels or suggest they break it up with trees that have a good canopy? What is your usual

recommendation for these types of properties.

David Hondula: Thank you, Councilwoman Whitehead for the question and your engagement in this process thus far. We have been thankful to receive some feedback from you along the way. I think that's an excellent question to be deliberated upon with the community, through this sustainability planning process.

The options you mentioned including adding shade structures over parking lot or increasing tree canopy are viable. They would achieve different benefits adding a solar canopy over a parking lot may not necessarily reduce the urban heat island because we are replacing one dark surface with another, but we would provide shade to people or infrastructure below the canopy. We could generate electricity but there might be other reasons to do so.

Whereas trees would offer a different set of benefits. You could see measurable effect on cooling, in addition to providing shade. I appreciate the difficulty in engaging private landowners on retrofitting historic properties and I think I'm glad we have talented elected officials who can think about how to create policies and incentives that would support those actions.

[Time: 00:22:38]

Councilmember Whitehead: Thank you.

Mayor Ortega: You are aware that when a development comes through, there are requirements for landscaping. And for instance, I believe that looks like that property there, has substantial amount of asphalt on it.

But our standards have been in place for 50 years, requiring let's call it lifetime maintenance and replacement of trees. So to -- to what extent can we actually look at those bald areas of asphalt where, in fact, when they get repaved every ten years or 15 years, there's fewer and fewer trees or replacements in that? Have you encountered that.

David Hondula: That's a terrific question and I may defer to my colleague on staff for the answer about compliance to the historical codes. As he comes forward, I will note as you saw in the report, I think a major challenge is that the new standards that are in effect for growth moving forward, seem relatively strong from a heat mitigation perspective, but as these holder properties that might merit retrofitting or may have deviated from what the standards were, that's where the challenge is.

Tim Conner: Thank you, mayor. Yes, I think that David hit it pretty much on the head. The historical properties that are older, a lot of them have lost trees. They have not been kept up as we hoped they would have been. We do not have in place right now -- well, with there's a development review board standard that if you lose trees you are supposed to put in new trees, however, a lot of the different people that are out there in the public, kind of look the other way on that.

So we don't have an active enforcement group at this time, to go out and cite. We do have code enforcement but they are doing other things other than looking for trees that have been fell.

Mayor Ortega: Thank you had. Back to Dr. Hondula.

David Hondula: Perfect.

Mayor Ortega: Part of what we're looking at from the satellite, or is really tremendous, however, of course, buildings have three-dimensionality, and that means more surfaces as they go vertical.

It may show up, you know, as a hotspot, but that's because it's -- we see some hotspots that are flat with nothing on them, which are generally the roadways and then the large, you know, parking areas.

How do you look at the verticality when you have more absorption area and kind of reflective heat that gets trapped in those -- that so-called skyline.

[Time: 00:25:35]

David Hondula: Mayor, that's a terrific question. Thank you so much if I might suggest that we revisit that question in a few slides, we'll have a chance to look at three-dimensional assessment of environment. I think it's a terrific point.

Mayor Ortega: Sure then seeing no other comments, let's move on with where you were.

David Hondula: Thank you, mayor. As we move not next slide, the mayor already hinted at looking at the landscape from satellites, which we have spent some time doing.

This map, which is available to all of you and the public at large is a map of those land surface temperatures across the entire city and just to give you a sense of the scale if we move forward to the next slide, we have zoomed in a little bit and you can get a sense for the resolution of this imagery down to tens of meters.

These images are reflective of summertime conditions, the particular satellite that was used only flies over our area at approximately 11:00 in the morning. So these represent late morning land surface temperatures during the summer.

And I can already see some of you are looking at interesting features on the map and you cannot identify some. The mayor as comment is particularly important in interpreting this map in that we're looking at the temperature of whatever the satellite sees first. In some cases that as a roof and in some cases that's the road.

But we might be missing some of the three-dimensional structure and we will show in a few slides some of the supplementary analysis. We don't look at looking at the land surface temperature as the only thing that's happening throughout the city. We had a chance to compare the land surface temperatures through the three growth areas. I'm sorry the font is a little small here.

Takeaway message that the growth areas are from a land surface temperature approximately 6 to 8-degree degrees Fahrenheit hotter. It's a great opportunity to schooling even with the focus in these three growth areas. More detailed maps are available as they flip through the next three or four slides. We looked at particular hot and cool spots.

We extracted the warm and cool places relatively for reach growth area and these are available for your review and subsequent contemplation. We looked at how land surface temperature varies. Up one more slide by census block group and you can see as we suspected from looking at the land cover types tremendous variability in land surface temperature as we move through different parts of metro Scottsdale with more than a 20-degree Fahrenheit range in how hot on average the land is in different parts of the city.

[Time: 00:28:08]

If we look at just the top five census block groups and the bottom five in terms the land surface temperature in metro Scottsdale you could see that they are geographically clustered. The five hottest census are in the southern part of Scottsdale and the five coolest are in the more central part of metro Scottsdale.

We had the chance -- as I mentioned we had the chance to look at parcel level data and we saw a very interesting pattern when we looked at how the land surface temperature of special versus residential parcels varies between the growth areas if I could draw your attention to the left most part of this figure for the airpark growth area, we can see there that the yellow bar is much higher than the blue bar.

The yellow bar represents commercial parcels. The red bar -- the blue bar represents residential parcels. In the airpark growth area, residential parcels are quite a bit cooler than commercial parcels. As we move into the other two growth areas and in particular into the McDowell Road and Scottsdale Road area, that shrinks. Whatever cooling items are implemented in the airpark growth area are not undertaken on residential parcels in the McDowell Road and Scottsdale Road area. The n here represents how many parcels fell into ex-of these different categories in those growth areas.

So another great opportunity here residential parcels in growth areas in the city are cooler in some growth areas than they are in McDowell road/Scottsdale Road what can we do to bring down the residential parcel land surface temperature I think it's an important question for the sustainability process to continue.

We will provide examples in the report as you saw about different block groups that have high and low land surface temperatures. We can see contrasting examples here. We could spend hours contemplating exactly what is happening, but we will spare ourselves that time this evening.

The modeling results were very nicely alluded to have the colleagues at SEAC, just thinking of a blocky crude sense. If we could turn up or down the dials for census block group areas in the city what might we be able to achieve in terms the land surface temperature. As we heard if we could add 1% more trees and shrubs we could reduce the land surface temperature by about .6 degrees Fahrenheit.

If we were developing a parcel from native desert or vacant land. If we wanted to avoid any increase in the land surface temperature, for every 2 units of building or asphalt we would add, we would want to add one unit of trees and shrubs. Mathematically that could give us, should give us roughly no impact on the land surface temperature. And we can see one more keynote and I think we will be at another place to pause, mayor.

We did find as is evident in cities all across the United States and especially in the southwest in tight couplings of land surface and temperature. I think this presents an important challenge for the sustainability planning process to continue and that the places that might be prioritized for cooling are also the places where residents might be least likely to be able to afford or implement some of the important cooling strategies. We heard in community engagement processes elsewhere in the valley, for example the real and/or perceived cost of water is a major barrier to tree planting at the individual parcel level.

[Time: 00:32:00]

And I certainly know from visiting many of these places in the city, throughout this process, in some cases, simple arrangement of the parcel and the infrastructure provides very little opportunity for free planting as we move forward in the sustainable process we need to keep our eyes open for opportunities to provide solutions to lower income parts of the city. Perhaps we could stop there mayor and see if there are additional questions on this part before we move on.

Mayor Ortega: I see none, and please continue.

David Hondula: Thank you, mayor. There are tree data available in the report, although I will note the tree data are from 2014. That's last time we have comprehensive tree data that are collected from an airplane that shoots a laser at the city using technology called LiDAR, that provides estimates of tree count, tree heights, and the number of stems. We expect the new LiDAR will be available soon.

I can't recall if Scottsdale participates in the regional LiDAR consortium. This date will hopefully be available in the next 12 months. In the industrial and shade plans around this region and

nationally, metrics related to tree canopies seem to be quite important and data like these collected from LiDAR could provide a tree plan. On to thinking about the three-dimensional environment.

As we discussed already, air temperature is not necessarily a great metric for thinking about how hot or cool we are, as we move between shaded and sunny environments and land surface temperature might be giving us a little bit of an imperfect picture on how hot different places are because of the three-dimensionality of the city.

[Time: 00:33:44]

To overcome this problem, researchers have generated if we could go back just one slide, generated some different strategies for collecting three-dimensional data about the thermal environment. Not only the air temperature but how humid it is, what the air flow is and what is the radiative environment.

Are we exposed to the sun or not, or how much, and what sort of heat are we getting from the surrounding surfaces? Right now we are exchanging heat with the walls around us, with the share, and the plexiglass in front of us. We can measure how much heat is coming from those surfaces as well and we did this by using this biometeorological cart known as Marty, which has a sensors that has many data.

Marty went on many tours of the city. We took Marty to four different places which are shown here, including the promenade shopping plaza and airpark, and two different areas around airpark and two different areas around old town, pardon me, as well as SkySong. And we are continuing to analyze the data that Marty collected that tell us how cool or hot these different environments are at the very fine scale, it is person scale we call it with different shade and sun and exposed to different levels of radiative heat.

We will not spend a lot of time talking about those results in great detail but as we look at the next slide, for example, we can imagine an unlimited range of landscapes we encounter as we move through the city of Scottsdale. Here are approximately 20 of them. Different ground cover types different. Exposure to the sun. Sometimes partial shading. We collected these detailed measurements in all of these types of environments and many more.

As we move to the next slide, we get a sense for how hot, as our body would perceive the environment to be, these different types of landscapes are and we don't have time to go through each individual combination today, but there will be more of that coming in the next report.

Draw your attention to two parts of this graph. One is how far the bars go to the right. That's this measure of the mean radiant temperature in the environment. This is the variable that we would like you to focus on and thinking about if a place is hot or not. Green bars that are farther to the right are hot, as the human body would perceive them, green bars to the left are not as

hot.

The red dots there that make their way down the middle of the figure, those are the air temperatures and how they vary from place to place and you can see shown on the same scale here that the air temperature variability is almost negligible as we move through these different environments compared to the radiant temperature.

If we could make more places in the city that have these bars far to the right, pushed to the left, people would feel much more comfortable as they move throughout different places. That's our goal in cooling Scottsdale, can we get these bars pushed more to the left, to look more like these landscapes down at the bottom.

One note, as perhaps a point of trivia, one of the absolutely hottest places we measured in the city was this landscape called w15, that has this interesting land cover of stone tiling that's separated by artificial turf.

And that artificial turf was the single hottest surface we measured anywhere in our whole campaign as we took Marty through these different environments and perhaps as no surprise, hot surface without any protection from the sun led this particular place, w15 to have a very, very high radiant temperature.

[Time: 00:37:13]

We do have thermal images have available from all the places that Marty went. We are taking pictures and we will look at how the different landscape and the building materials are performing in terms of land surface temperature and then again we can see that artificial surf between the stone tiles really glowing as one the hottest places we visited.

To get a broader sense we had a chance to take? Thermal pictures from a helicopter and they are available as well. Here's one the Scottsdale's prized natural resources the Indian bend wash and we can see thermal photography shows how much cooler this environment is compared the surroundings.

We heard from SEAC and staff about this tremendous resource in Scottsdale, Indian bend wash. How much cooling did it provide to the surrounding area and to people using and recreating in the corridor of the wash. The answer was not known. It was not investigated previously by researchers and we were motivated to do so.

So we deployed a feel campaign on the next slide to compliment the imagery. We deployed weather stations in nine different locations in and around Indian bend wash, and selected data over the course of the summer. And this is one of the data sets that we're continuing to analyze, but we do have a little bit of a teaser, which we'll save for the very end of our presentation of how much cooler Indian bend wash seems to be. Let's move on to talk about the recommendations.

Again, the recommendations that we came to, we tried to base on the analysis that we conducted. So please know that these are not necessarily the comprehensive reductions for strategies that the city might cool -- might use to cool itself. We saw tremendous conceptual alignment with documents the city has written over the past 20 to 50 years. It is hard to find a Scottsdale planning document that doesn't speak in some way to providing a comfortable environment, providing more particular shade, using particular types of vegetation. But what we saw was missing from any of the documents were specifics. What are specific targets? Are what the mechanisms for evaluation and benchmarking? What are these levers that we can use to ensure that where we had standards in the past, that they are still being met today?

We didn't find as much evidence of those specifics as we expected. We do see development and existing infrastructure. I think it's a safe bet that a lot of new development, even development in the last five or ten years is cool. There are codes that require certain amount of the landscape to be reflective or to have trees or other desired cooling properties. But this existing infrastructure it's a real thorn on our side. We already have a lot of existing infrastructure.

[Time: 00:40:11]

Southern Scottsdale, both the growth area that we focused on, McDowell Road and Scottsdale Road and the surrounding residential neighborhoods emerged as a priority for cooling strategies.

First general goal related to increasing tree canopy could be pursued with a wide range of actions including an urban forestry master plan. We absolutely support this idea. We have enthusiastic support from SEAC and staff. As we would move forward into that process, whether it's embedded in the sustainability plan or a standalone process, we would encourage council to think about different types of metrics that we have seen from peer cities.

Instead of a citywide tree canopy goal which I would argue becomes a little awkward to think about when we have large parks and mountain preserves. Instead of thinking about one number for a city, maybe a minimum target for each and every residential area could be more effective in achieving our goals.

As we have already talked about, what can we do in southern Scottsdale to help tree planting there? What sort of partnerships can we enhance with organizations focused on tree planting such as Trees Matter. There's a longer list of possible actions in support of this goal in this report. For the second in reducing dark surfaces we think there's some analytical possibilities ahead, including conducting an inventory of cool roofs in the city.

Cool roofs are often a win/win, thinking about both the environment and economics if building is absorbing less heat, the energy demand can be much lower. Again, a wide range of options are available in our support. And shaded parking. This is something that Councilwoman Whitehead.

Maybe there's a negligible benefit but it would provide more shade to for vehicles and maybe generate additional economic activity for those businesses. So maybe there's a hidden win/win there. I think worth exploring. Our third goal related to pedestrian shade, some of the most fantastic transit shelters that we have seen anywhere in the region are in Scottsdale. Providing shade for folks using active transportation seems to be something that Scottsdale is doing very well and as is the case in every other city in the region, how can we do more of that in March places.

I think it would be interesting to contemplate shade coverage along routes. And the Maricopa Association of Government has some ideas about how to do so in the active transportation planning tool box. As we were going through these assessments as well, we certainly found ourselves at many bicycle racks and water fountains where it didn't seem like there was a lot of shade nearby and these places could be enhanced to be places of respite for folks using these active transportation modes.

On the next slide, we have the story map, which we may go to on the web browser at this time, just to give you a flavor for what this looks like. This is a draft version that's absolutely ready for your input to make it more attractive and appealing, and we can casually scroll through the story map here, introduce them to some parts of project, including the schooling strategies and the heat safety, as we move down, we will encounter different inactive components where residents as we keep scrolling. Thank you.

Doing a fantastic job will find places to engage with the land surface temperature map, focusing on particular places. Where do we see places with high land surface temperatures. Where do we see places with low land surface temperatures and why? Places where residents can use a slider bar to look at how the lab cover is related to land surface temperatures and understand what is happening in different parts of the cities.

[Time: 00:44:10]

At the very bottom of the story map, where we will eventually get, there's a survey that is imagined to collect input from residents on how they would like to see the city moving forward with different cooling strategy. We look forward to your input on the story map. To wrap up, forthcoming if we go back to the slides. Thank you for navigating the story map.

Forthcoming in the second volume, the mean radiant temperature analysis from Marty cart and the Indian bend wash cooling assessment and more analysis of the thermal photography and maybe more additional recommendations. And for the first look at the Indian bend wash. In Indian bend wash, in southern Scottsdale where we made measurements, Indian bend wash is about two to three degrees cooler than the surrounding neighborhoods.

When the wind is blowing in different directions do we see any cooling benefits extended into the surrounding neighborhoods from Indian bend wash. If that benefits exists it could be a large

number for cooling and energy savings. Thank you for the support in this project, particularly from staff. We really enjoyed working with you and thank you very much.

Mayor Ortega: We have questions from Councilwoman Whitehead and the n Councilmember Milhaven.

Councilmember Whitehead: First of all thank you! Great presentation. I got to see it twice, and twice I was kind of listening in on the SEAC meeting. I guess my question is more staff. I like the idea. I have been trying to figure out how do we do a -- you know, a tree can know my plan. The targeted goals. Good idea.

We need to pick areas and then figure that out. But then the rest of my questions are for staff. I was thinking Bill Murphy. I see the City Manager Thompson sneaking away and thinking that's -- he's just closing the door. But yeah.

So I have a few questions on just the tree canopy, because we put that in the general plan, what are the next steps? First of all, we have this heat mitigation plan, how do we -- what's the next steps to adopt, that to make it an official policy? How do we get to there?

[Time: 00:46:49]

Tim Connor: Mayor and Councilwoman Whitehead, we are considering this as a study.

Councilmember Whitehead: Okay.

Tim Conner: And it will be incorporated into the new sustainability plan work that's going on. And we'll have a brief presentation on that tonight. It won't have detail in it, but it will at least show you the scope of work that we had worked on.

Councilmember Whitehead: Okay. So that's good. So it will be when we adopt the sustainability plan, the heat mitigation will be a section of that?

Tim Conner: That's correct.

Councilmember Whitehead: That sounds good. And on the tree canopy writing an urban forestry master plan, I guess this is a question probably for City Manager Thompson, do we have a staff member? Is that in the works? Is that -- how do we do that? How do we draft up an urban forestry master plan?

City Manager Thompson: Mr. Mayor, Councilmember Whitehead and members of staff. We have multiple staff in multiple areas. So as we get the final document, we'll work through and generate a work plan in the area specific. There's some as you will see in here that are relative to planning.

There's some relative to our codes, associated with building codes and there's some relative to landscape and would be parks and recreation and areas that we control, areas that we don't control would be on the private sector side. That would be more on the development discussions.

Those which the issue came up earlier in the slide which was shown, I know exactly which property that is. One of our larger employers and as many things were designed in the past, they were very large parking lot. It's a touchy subject to go out and redevelop them.

I think it was noted during the presentation that some of the building materials today reflect and/or absorb heat in a different fashion than some of the older materials that were used in construction.

And so those would be found associated in the codes as well, which would fall to planning. So it's going to have to be a comprehensive effort across many city departments, not just limited to one area and we have staff assigned to many of those.

We actually have multiple certified forest -- foresters on staff and we have multiple arborists and so forth in different areas. And so, again, bringing them all together. The other part of the study that I think is interesting, we concentrated on -- and this was important and those that either have high growth where the density is much higher than other areas, where it's usually warmer.

I think new compare Scottsdale, based on the density and size to the neighboring jurisdictions or anybody in the valley per se that we would find ourselves in a cooler scenario than many, we also have a higher elevation gain so even on the maps, you would have to take some of that into consideration as well, if that elevation as it goes to the north and towards the mountains, out east and so forth.

[Time: 00:50:09]

So, again, but back to the question specifically, we will use multiple staff and multiple areas and we already have a team that's been working on this. That's crossed departmental. And we'll continue to do so. I don't want to isolate it to one area.

Part of the reason for that, I want it to become part of the culture in Scottsdale and part of our organization. It's not limited to one department and responsible, but there's multiple departments responsible and that is part of what we do continually, and forward looking.

We do have some changes organizationally that are coming now. Associated in this area, more on sustainability than others, and so those are forthcoming and then we'll have an individual assigned our director position that we have created that will be filled in the near future and when that is filled, we work across departmentally as well.

Councilmember Whitehead: Great. Something you said triggered my next question, which has to do with the trees, how trees disappear over time. So other jurisdictions we know have fines. They have a fine-based system that if trees are required, you know, whether it's 30 years ago, they do have to be -- they are verified by code enforcement and the property owners receive fines.

I think that's a change to the DSPM, I think is what I have been told. Is that something that we can do is -- we have talked about this too, increase tree size for new development and incorporate some sort of punitive response to trees not being replaced and what would be the process for that?

[Time: 00:51:54]

Tim Conner: Mayor and Councilwoman Whitehead, I can try to start to approach that answer. Essentially, we are looking at a tree ordinance to keep our tree city U.S.A. status. And that's what you will see in some of the other communities that you referenced is that they have a tree ordinance and that can go into enforcement, as well as to if you want to have minimum sizes in certain areas you can go ahead and specify that.

Our planning documents right now do do a fairly good job at describing the tree sizes that are planned and they are not all specimen trees but they are nice sized trees.

Councilmember Whitehead: I want to increase the tree size of what is considered mature. I read that ours are a little by smaller. That's okay do. We have -- are we part of the LiDAR? -- part of the group that does LiDAR? I had not heard of that. So that was new to me. That to do flyover.

Tim Conner: We have a LiDAR usage in our water department, and I know that we want to interface more with them about the tree canopy, they take in the tree canopy, but they are looking at grass coverage because they are trying to reduce the turf. That's their goal and our goal is to do that and the rest it.

Councilmember Whitehead: It sounds like there might be a regional effort to do the trees and yes, I'm aware about the water department. And then finally, I mean I would love to hear -- I would like to get an overview from staff of what we can expect next. Kind of some target dates and which part department is going to do which part of the next step, the different components. That would be really helpful.

I think the gentleman from A.S.U. mentioned we have lacked specificity in the past. I think we have a council who is all gung-ho about moving forward. I want to thank SEAC, and I want to thank A.S.U. and Tim you specifically.

Tim Conner: Thank you very much. Mayor and Councilwoman Whitehead, I can go through this slide that is up right now that tries to speak to the next steps. It's a broader perspective. We

haven't gotten to the level of assigning specific dates. We have short-term strategies and we also have long-term strategies.

The shorter term strategies as you will see are somewhere between one and two years to get accomplished. Sometimes less than that. One of them, again, was to incorporate this cooler study into our sustainability plan. We want to have staff incorporate the story map, as soon as we have a draft that we feel comfortable. We will put that on the sustainability Scottsdale site and we will advertise that for people to look and the tree ordinance, for tree city U.S.A. That's not a bad sign but I think it will give us an opportunity to do a few more things.

I know Bill Murphy and myself have talked a little bit that. We will look at the ordinances. We will strengthen them and the design guidelines but looking for incentives to look at the tree canopy.

[Time: 00:55:24]

You have incentives and sometimes it's tradeoffs, but at the same time, you know, maybe we can actually stiffen our rules a little bit at the same time. We will look at the reflective roofs and why don't we have more. I think that that will be something that they will be taking on. And I think they are really gung-ho about that because they are in the throes of an energy assessment for all of our buildings.

So the longer-term strategies, tree and shade plan. That's one the things that makes a tree and shade plan and the forestry plan successful is you have ongoing staff that are making sure that they are keeping that plan moving forward, and basically being the advocates for the plan. We do want to develop more recommendations for incentives of planting trees in residential neighborhoods.

So that will be something we will be looking forward to. And then inventory, all the shade areas that we have in our public right-of-ways, and looking at our decreasing, how we do that, whether it's treed, structured shade, looking at the areas in our open space, our bicycle areas, and our walkways and just taking an inventory that and starting to come to a capital plan to try to install some of that work.

So that is really about what I have tonight. I was going to say next slide, but I don't think we have to go there.

Councilmember Whitehead: That's very good. Thank you.

Mayor Ortega: Councilmember Milhaven and then Littlefield.

Councilmember Milhaven: Thank you. And thank you for the great mention and I'm certainly supportive of fleshing out all of these and taking them to the next level. So thank you very much but I do have a question for Dr. Hondula.

As you were seeing there seems to be a natural tension and you made a little comment about water, right? So there's a natural tension, all of the cooler places you are showing us on the map are grass and lakes and where there's more landscaping and pools and all things that use a lot of water.

And I know we can do things like native trees and more native trees and things that are more water respectful, but there still seems to be this natural tension between water conservation and heat island.

And so as we consider policies and things to try to strike the right balance for our community, what are some of the things you think we should be aware of or keep in mind as we try to strike that balance?

David Hondula: Thank you for the question, Councilmember Milhaven. I think it's a fantastic one and it's a subject of decades of research at A.S.U. So not to promote the home team, but I think continued conversation with some of our colleagues who have looked very closely at that tradeoff and the research is getting to the point now where some of my colleagues are really looking at the species level on water consumption and cooling provision, such that we can get -- you know, it's not just about drought, tolerant, and it can be one, two, or three specific species that meet those demands.

[Time: 00:58:35]

I appreciate it is a challenging conversation. We use water directly and indirectly. We use water for energy and if the city is hotter, we are using water on the back end in our calculations to produce or transmit that electricity in the first place.

So we did not conduct a full life cycle style assessment, about you I think it's possible that some of water use would be recovered in a more comprehensive calculation of the benefits that we're getting the tree planting. I know that's a hand waving answer. I don't know if staff has additional comments on this.

Tim Conner: Just that we had extensive conversations with Brian Biesemeyer and those will continue because he has the same opinion. He's trying to make sure that we do a balanced effort when we go that.

Councilmember Milhaven: We have incentives for people to take their lawns to desert landscaping but it looks like that creates more heat but it certainly conserves more water. And I think keeping that top of mind as we walk down this road and explore some of these would be really important but really great work and thank you very much.

Tim Conner: You bet. I have one other thing that I could give you, it's going on, I think in Gilbert, I'm not sure exactly. But if you do take out your desert landscape -- or your turf landscaping and

put in desert, they are giving credits for the number of trees you put in and you get a rebate on that. I know our conservationists are looking at that.

Councilmember Milhaven: Thank you.

Mayor Ortega: Councilwoman Littlefield and then Councilwoman Janik.

Councilmember Littlefield: Thank you, mayor. Well, my first comment echoes councilwoman's Milhaven's and my concern with the push/pull between water and non-water usage, because as you know, we are in a drought. And Scottsdale?

A desert and so the use of water needs to be fairly analyzed from beginning to end, and I'm quite willing to say, okay if we use more here then we don't use more over there, that that should be tested and proved. I'm glad you are working with Brian Biesemeyer. I sat there and listened, he wanted me to take out grass. Okay. I was going to do that. Now maybe I'm not going to do that.

[Time: 01:01:00]

It will put our citizens in a quandary and then in a question spot. So we need to be able to answer them fully and completely as to what is the best thing for our water conservation. I get a lot of questions and emails from people about water in Scottsdale and I think that that's something that they would be very, very concerned about.

Second, I had a question, when you were talking about your -- engaging with the land temperature maps and the story maps of what you were doing and you said to something to the fact is the last that we will do, citizen input as far as what they want. Time not sure that's last.

Oftentimes, especially people who have lived here 20 or 30 years. They are familiar with the area and they know a lot about stuff and how it works and doesn't work and maybe that's something you ought to move up on your agenda a little bit to have some citizen input on what they think would be beneficial and what they think would not and why because there's an awful lot of smart folks out there that have their concerns. They don't necessarily bring them up here to council, but they know what they are talking about.

And the last thing, I would like to see when we wrap a lot of this stuff up and come down to some consensus here and there on where we think we want to go and what we want to do, I would like to see a cost versus benefit analysis complete because I think that's very important for our budgeting process.

We need to be economically responsible, and any plan that we have needs to be feasible economically so we can support it. It doesn't do any good to start something up and drop it halfway through. It just wouldn't work. So I would like to see a plan that comes through. This is fascinating to me. I really enjoyed this tonight. Thank you very much.

But I do want to make sure that in we do something like this, that we work it out and it's economically feasible for the city to continue it and not have to stop it. So thank you.

David Hondula: Councilwoman, thank now are the comments. If I may respond, mayor, we absolutely agree with the spirit of both comments, particularly the one about public engagement which is something we take very seriously in the urban climate research center at A.S.U.

We had a strong sense from the beginning of this project that the sustainability planning process would follow this project in which we know that there is a very robust community engagement process planned, not to steal the thunder from my colleague who will speak next.

So with guidance from staff, we will thought it was the best use ever our time and energy to do some of this baseline assessment work, that then could be fed into the participation process with one ever our best public engagement scholars will be working with you on that project. So, yeah, we absolutely take that seriously and we got to hear some wonderful perspectives from neighbors as we were installing temperature sensors.

The cost benefit analysis, the timing is fortuitous, the natures and conservancy, Arizona chapter has the forthcoming analysis on heat and air and the cost and benefit of action and enact. We had a chance to serve in an advisory process and I think we will see the final report over the next two to three weeks which I think can perfectly dovetail into this conversation.

[Time: 01:04:40]

Councilmember Littlefield: Thank you very much. I have been very interested in this tonight and I appreciate your time and your work. Thank you.

Mayor Ortega: Councilwoman Janik and then Vice Mayor Caputi.

Councilmember Janik: I wanted it thank you for a great presentation, filled with data and thank you very much to everybody involved. My comment is Dr. Hondula. I thought I heard you say, you will suggested that perhaps we look at one prototype area to begin the process for what we do when we have similar characteristics in various parts of the city.

And I guess my recommendation would be that, yes, I want to look at the whole city, but I also think that we could probably divide the city up into similar characteristics, prototype areas, and then hit one of those areas at a time, because sometimes when injure project is too big, you can't get anything done. And budgetary considerations as well. So I think that might be a beneficial way to proceed. Do you have any comments on that?

David Hondula: I agree with in the data package that will be coming your way are the full set of metrics for every census blockgroup, which I think might be a manageably sized area to think

about in terms of how do we modify, incentive modifications to the landscape in this particular area. There are a few places that come to mind all in southern Scottsdale off the top of my head, but, yeah thank you.

Councilmember Janik: Thank you.

Mayor Ortega: Vice mayor Caputi.

[Time: 01:06:23]

Vice Mayor Caputi: I like that sound. Thank you for the presentation. I just had a couple of comments. First of all, I think we should congratulate ourselves. Everyone is definitely interested in the idea of conservation and sustainability and taking a look at our water and our tree cover and all of this stuff.

Scottsdale has already done a great job as our city manager pointed out. We have got -- I think we started our meeting talking about how we are the largest urban preserve in the country which is incredible. We have most open space of most of our neighbors and the lowest density. And as you pointed out in a lot of our documents, we already done a great job of talking about how we're going to make sure that we have sustainability and that we take a look at all of these heat mitigation strategies.

I think we have spent so much time in our general plan making sure that we address this and the character area plans and all of our documents and I made this comment from the dais before. We have these amazing documents.

We are spending hundreds of thousands of dollars to make sure that we do these things. And I just want to put out to the staff, and to my fellow councilmembers that we really should take a look at all of these issues of sustainability that we are talking about. If we are going to look at things like reducing land area, of exposed asphalt and hot surfaces using energy efficient measures then we really should actually do that.

I mean we have been looking at projects that try to encourage live, work, play, decreased traffic, right, decreased the footprint of the buildings that we are putting up, and then when they come before us, we sort of push them away and forget that these are things that we do want to address. It's super important for our city.

So I just want to make sure that when we -- we take your -- your consideration -- you know, the things that you are recommending for us to do, that we actually do a little as you said, make a plan and do them. Because that's the most important part. We can sit up here and talk about how great it is, and how important it is to us as a city, but if we don't actually put these things in place, not just trees, but the holistic approach to making our city cooler, then we're sort of wasting our time and our money.

So I know some comments were made about budgeting and economics and yes, I couldn't agree more. And water all of these things are super important. Let's make sure that if we -- if we make a good plan, that we do it. So thank you.

Mayor Ortega: Councilmember Durham and Councilwoman Whitehead.

Councilmember Durham: Thank you, mayor. The first thing I wanted to say was I thought that this report was extremely impressive. It was very well done. It was written well. It was easy to follow, easy to understand. The presentation of the data was excellent. And so it's a really, really good report. I have read a lot of reports in my life and this is a very good one.

[Time: 01:09:41]

David Hondula: Thank you, Councilmember Durham. I was attempting to acknowledge my teammate Mary Wright who was largely responsible for the quality.

Councilmember Durham: Yeah, that's what I figured. I know how this usually works. I figured she had a big hand in it. I agree with -- with Councilmember Janik that it might be good to start this? Some pilot areas small projects.

Obviously the southeast corner, no not southeast, the southwest corner is one that could really use some work on the tree canopy very soon. One of the things I was thinking whether we could engage community groups in that. I remember many years ago when I was a Boy Scout, we had a program of planting trees in developments and I remember planting trees in new developments and just thinking out loud of whether it might be possible to engage groups after appropriate training. I thought that out as a possibility.

David Hondula: Thank you. Certainly agreed and there are a number of organizations that can help with that training, a group that have many arborists on staff as well. Yes, I think your point on training is particularly important. I believe there's a saying in the tree planting community that I'm sorry to say this, that one of the best ways to kill a tree is to have a volunteer plant it. And we don't have a lot of time to make false starts in tree planting. So I think anything we can do to bring in expertise to that planting process now to ensure that the trees grow to maturity is critical.

Councilmember Durham: Thank you.

Mayor Ortega: Councilwoman Whitehead and then I will wrap up.

Councilmember Whitehead: You know, I have one question for you, Dr. Hondula. We talk about roofs and solar panels on top of parking lots are there any data showing solar panels keep the attic cooler and reduces the air conditioning bill?

David Hondula: Thank you, Councilwoman Whitehead for the question. So it stands to reason

that that would be the case because the building envelope is shaded is and cooler, if there's research demonstrating that, it's quite new and I will ask my colleagues when we are back.

Councilmember Whitehead: You said energy is -- or that power is water and so I do want to point out that 40% of Scottsdale's treated water is used to generate energy. And so, indeed we want to keep the A. C.s off in this town. So thank you.

[Time: 01:12:42]

Mayor Ortega: Well, thank you very much for the presentation. And part of our feedback is perhaps what might be missing. And I would -- I do sit on the M.A.G. regional executive council and we are looking at the transportation element and the projections just to 2030, which are of record indicate pretty much gridlock on our streets all the way up to almost Frank Lloyd Wright and it's illustrated on the main north-south Miller, Hayden, Scottsdale Road, and it's -- it's shown to gridlock and they are trying to -- I think we could see that information overlaid for our -- to digest.

The other thing is the trees get toasted out here. The Sissoo trees. They get toasted. They seem to be indestructible. I mean the last winds knocked down three of indigenous trees and the Sissoo trees are still waving at us. There's a life expectancy is, it's usually about half of what is expected when it's in the dense urban situation.

I would like you to look at the possibility of maybe some shading in our alleys. Perhaps this there is a way not necessarily with trees but offset element, that might work, that is an asphalted area. The numbers a saw for south Scottsdale and actually from in the MAG reports to replace the current prop 400, that expires in 2025.

But nothing in that really relieves our major gridlock in Scottsdale. It's sort of like the water usage for trees and outside is a larger proportion of our overall water. I just wonder how we can measure the transportation element. And it correlates with McDowell and the other areas and if it's probably 50 to 60% 69 of the heat load generated by traffic.

The water cooling towers where they use water for evaporation and it's very water intensive, but essentially trees are a form of a cooling tower where they are respire and pull water in and out. I'm very interested in looking at enforcement not just for the trees that have been lost and not replaced but usually the plumbing for them, all the irrigation is broken or leaking and it's not working, right? After to years anyway. So the type of irrigation systems that need to be replaced is part of the turnoff for why people don't replace those trees and then as you come out of a parking lot, you know, you have no shading at all. So in conclusion we really appreciate that.

Hopefully this input is useful and we will look for the next supplement. And move on to the sustainability plan.

David Hondula: Thank you, mayor.

Mayor Ortega: Thank you.

ITEM 2 – SUSTAINABILITY PLANNING PROCESS UPDATE

[Time: 01:17:03]

Mayor Ortega: Our next presentation will continue.

Tim Conner: Yes, sir. Yes, mayor. I'm going to give a very brief introduction. Bill Campbell is our portfolio manager with the sustainability solutions group. And so he oversees coordinating a lot of these different efforts with people and makes sure that they are on slide.

I don't think we need to repeat what we said on the last slide and the last presentation. So with that, I will go ahead and turn it over to Bill.

Bill Campbell: Thank you, mayor. I'm Bill Campbell. I'm the project manager on the sustainability plan project we have going with Tim and his group, the city in general. The faculty on this project is Dr. Mark Roslen and his name is Dr. Raj Bush. They both send their regrets for not being here to present tonight. But they will be here another time.

So like I said they have been working with the office of environmental initiatives to develop a sustainability plan for the city of Scottsdale and throughout this presentation, please feel free to stop me and ask questions.

So first, I want to start off and talk a little bit about what sustainability means for the city of Scottsdale. So sustainability for Scottsdale refers to the long-term social, environmental and economic health of the city -- the community. And how can that impact and how can the sustainability plan impact that, well through the goals defined in the general plan, 2035 plan, we can start solidifying those with measurements and practice and plans to actually implement them.

We can implement a lot of stuff that Dr. Hondula also talked about with the urban heat island. This will solidify a plan to be advancing sustainability in Scottsdale. So what we have done is we broke this project up into three phases. The first phase is the sustainability scan. The second phase is sustainability planning workshops and the third phase will be the final report and presentation.

So the sustainability scan, we have been reviewing best practices, locally throughout the United States and around the world, for all the municipality sustainability plans and what could work for Scottsdale and what couldn't. And we have been interviewing Scottsdale staff members to learn all about what sustainability has been in Scottsdale, what they have done, with -- what they are currently doing and what works and doesn't work. This will help us get a feel for what we could put into the plan moving forward.

So this preliminary scan for the city and the community will include a gap analysis. For the things like policy, metrics, programs, you know, what is needed to fill the gap to make sure that Scottsdale is headed for a more sustainable future. And, for example, one the things it might include is a greenhouse gas inventory. Next slide.

Oh, no, stay here for a while. On the second phase, we will do the workshops. Do you have a question, mayor? The second phase we will do the workshops and this is where we get into a lot of our engagement with the citizens and the different citizen groups. This will provide -- we use a sustainability scan that we develop in the first phase and the background report to develop these workshops.

[Time: 01:20:58]

The workshops will build upon the existing work that's going on with the staff, and they are currently some of the -- some of the staff is currently going through the ICLEI process. It's an organization that supports local government Tuesday sustainability. And workshops will help us to establish measurement and measurement and metrics and reporting guidelines. And this phase will be three workshops.

One with the city staff and a variety of departments and you can see that's referred to as SEAC plus. We have been working with closely with the SEAC group. But these workshops will also include other citizen advisory commissions and city liaisons as recommended by city staff. So the result is the summary report that is the basis for phase three. Okay?

And phase three, we'll gather the information from the sustainability scan, and the stakeholder interviews along with the output from the workshops and along with we are preparing the final report and the presentation and these outputs in the final report and the presentation will include visions, goals, metrics for the sustainability plan.

It will draft an implementation strategy and consultation and coalition with the coalition of municipal and citizen stakeholders. Then we'll be measuring and reporting metrics. Key elements for how the plan will be implemented. And a plan implementation mechanism. The final sustainability plan is completed in late summer or fall of 2022. Thank you.

The next two slides will outline the opportunities of the city council to participate in the development of that man and we'll also talk about how we are engaging with other stakeholders throughout the community, to get feedback and input into the plan.

So this is the outline right here for the council's participation. Right now is the initial presentation. We'll be back in January -- no, December -- or December an January, we will provide the opportunity to meet with you in small groups, three or four to provide you an update and get you feedback.

And then in the spring of 2022, we will be back here again, likely one of my colleagues will be presenting to provide an update to another working session in the environment. And finally in fall of '22, we will present the final city -- the plan -- the final plan to the city council. Next slide.

This talks about how we are engaging and who the stakeholders are. We are working very closely with Tim and his team to understand everything that sustainability Scottsdale was and will be. We are meeting monthly with the Scottsdale sustainability steering team. And then we have four with the SEAC committees. We have working sessions and updates. So we will be providing updates to them and providing inputs to get their feedback.

[Time: 01:24:46]

In addition, we will have two three-hour workshops with city staff, up to across the city departments for up to 30 participants each. These will be three-hour workshops. We will have a total of four citizen group workshops. The SEAC plus that we referred to before, and then November/December time frame and then two again in May.

The participants will be drawn from the SEAC and other citizen advisory commissions and the liaisons as defined by the Scottsdale core team. Each of these three citizen workshops will be, again three-hour workshops and supported up to 25 people. And finally, we will be presenting to the SEAC commission in July and August of 2022.

So right now what we are doing is we are working on the sustainability scan and reviewing documents, interviewing stakeholders and understanding all things sustainable and that have been and welcome in Scottsdale. So we can learn what worked, what didn't work, and why.

So this is a quick overview of the sustainability plan and what we will be doing, what we have been doing and what we will be doing and I invite your questions or comments.

Mayor Ortega: Councilwoman Janik.

Councilmember Janik: Thank you very good information. I would encourage you as much as possible to make sure that all the residents of our community have the ability to view or listen in on the work that's being done.

So that either -- so they can participate -- not participate, but be aware of it or that reports be sent out regularly so the citizens know what is going on. We need the citizens to support this if we want to get it done and if you eliminate them, this there be hard feels and it will be hard to overcome. So that would be many I recommendation. Thank you.

Mayor Ortega: I would add, you are going to look at all the stakeholders and major employers and input from many parties. One the mega trends has to do with all electric vehicles. And whether or not there's charging stations available and, you know, I want to encourage that as well in terms, again, the transportation element.

We recently hosted a -- there's pilot program that will be started here in Scottsdale by General Motors and it's called the cruise program. So they have mapping our city and looking at some efficiencies there and they will they are producing a six passenger driverless vehicle that we will see in Scottsdale.

[Time: 01:28:00]

It's the first one for the United States and that's, I believe, called the orbiter and we will be seeing some innovation, you know, possibilities there. But there again the other word I'm getting from some of the larger waterfront units is they don't have the electric hookups for the demand of their electric vehicles. And it's not cheap to get it in there either. They -- so they are deficient in infrastructure to provide that. We'll look for everything as it progresses and thank you very much. I see no other comments on this subject.

That would -- again, thank you so much for your effort and continue to keep us informed. I really want to thank the environmental commission, as well as for the work on sustainability and their input.

ADJOURNMENT

[Time: 01:29:03]

Mayor Ortega: With that I would close this work study session and request for a motion to adjourn. We have a motion from Solange Whitehead and second.

Councilmember Janik: Second.

Mayor Ortega: And so any other discussion?

Presenters: Thank you, mayor and council.

Mayor Ortega: Yes, thank you. Please register your vote. We are adjourned. Thank you so much.