

Webinar

Water Wise Development Coalition Meeting -12

Date: February 11, 2026

00:00:09 --> 00:00:10: Hello, everyone.

00:00:10 --> 00:00:11: Welcome.

00:00:11 --> 00:00:13: Thank you for joining us today.

00:00:14 --> 00:00:15: My name is Marion Epig.

00:00:15 --> 00:00:18: I'm the Senior Director of Resilience for ULI.

00:00:18 --> 00:00:20: And it's my pleasure to welcome to you to the

00:00:21 --> 00:00:23: Water Wise Development Coalition meeting today.

00:00:24 --> 00:00:26: It's on data center best practices.

00:00:26 --> 00:00:28: While I do some intro remarks.

00:00:28 --> 00:00:31: You're welcome to just add your name, organization and where

00:00:31 --> 00:00:33: you're calling in from into the chat box.

00:00:34 --> 00:00:36: We'd love to just see who all is participating today.

00:00:41 --> 00:00:44: For those of you who are new here, You will

00:00:44 --> 00:00:47: Lie or The Urban Land Institute is a global nonprofit

00:00:47 --> 00:00:51: focused on responsible land use and sustainable developments.

00:00:53 --> 00:00:57: We have over 46,000 members, including a broad range of

00:00:57 --> 00:01:00: professionals active in real estate and land use.

00:01:01 --> 00:01:04: We work globally, nationally, regionally and locally, and we have

00:01:05 --> 00:01:08: over 70 district and national councils, which is what we

00:01:08 --> 00:01:10: call chapters all around the world.

00:01:13 --> 00:01:17: I work for Utilize Urban Resilience Program, which is focused

00:01:17 --> 00:01:20: on how building cities and communities can be more resilient

00:01:20 --> 00:01:25: to the impacts of climate change and other environmental vulnerabilities.

00:01:25 --> 00:01:29: We do this by advancing industry understanding of resilience, cultivating

00:01:29 --> 00:01:34: champions and catalyzing partnerships and supporting communities directly and becoming

00:01:34 --> 00:01:36: more climate resilient.

00:01:38 --> 00:01:41: We have many reports that are available for free on

00:01:41 --> 00:01:45: our website on all sorts of resilience related issues.

00:01:45 --> 00:01:48: We hope that you find these, and if you have

00:01:48 --> 00:01:50: any questions about these, we'd love to hear from you

00:01:50 --> 00:01:51: as well.

00:01:53 --> 00:01:56: One report in particular that's relevant to this coalition is

00:01:57 --> 00:01:58: our Water Wise Development Report.

00:01:59 --> 00:02:04: This report introduces the challenges associated with limited freshwater availability,

00:02:04 --> 00:02:07: and it provides best practices for real estate and land

00:02:07 --> 00:02:10: use professionals across sectors to address them.

00:02:10 --> 00:02:12: You can access it for free via this QR code

00:02:13 --> 00:02:15: and I believe my colleague will be sharing some links

00:02:15 --> 00:02:16: in the chat as well.

00:02:20 --> 00:02:23: For those of you who are also interested in the

00:02:23 --> 00:02:27: issues related to too much water, we also have resources

00:02:27 --> 00:02:28: along those lines.

00:02:29 --> 00:02:32: The Harvesting the Value of Water report is about green

00:02:32 --> 00:02:36: infrastructure and the Surge report is about coastal resilience and

00:02:36 --> 00:02:39: how we can enhance our coastal resilience through real estate.

00:02:40 --> 00:02:43: These reports and many others are available for free on

00:02:43 --> 00:02:45: our website and we hope that you grab them.

00:02:49 --> 00:02:52: Also, for those of you who are new here, the

00:02:52 --> 00:02:56: Water Wise Development Coalition convenes land use and real estate

00:02:56 --> 00:03:00: professionals with public sector decision makers to advance water smart

00:03:00 --> 00:03:03: real estate development and supportive policies.

00:03:03 --> 00:03:07: It's free to participate in the coalition's quarterly virtual meetings

00:03:07 --> 00:03:10: and participants have a say in meeting topics, speakers and efforts.

00:03:11 --> 00:03:11:

00:03:11 --> 00:03:13: We hope you'll stay until the end to be part

00:03:13 --> 00:03:14: of those discussions.

00:03:18 --> 00:03:20: To set the stage for our speakers today, I've been

00:03:20 --> 00:03:22: asked to provide a bit of context.

00:03:22 --> 00:03:26: As I'm sure many of you know, there are big

00:03:26 --> 00:03:31: investments in data center development that are under way to

00:03:31 --> 00:03:36: meet the growing demand, and data centers use significant amounts

00:03:36 --> 00:03:38: of energy and water.

00:03:42 --> 00:03:45: Here's some projections of how water and energy used by

00:03:45 --> 00:03:47: data centers is expected to grow.

00:03:47 --> 00:03:50: By around 20-30 U.S.

00:03:50 --> 00:03:53: data centres alone are expected to at least double their

00:03:53 --> 00:03:56: energy and water use within the next five years, but

00:03:56 --> 00:03:58: the numbers may become much higher.

00:04:03 --> 00:04:06: Along these lines, I think it's important to note that

00:04:06 --> 00:04:08: there are trade-offs between water and energy use.

00:04:09 --> 00:04:13: Water cooled data centres generally use less energy, while

data

00:04:13 --> 00:04:18: centers that employ water efficient dry cooling systems have

higher

00:04:18 --> 00:04:19: energy demands.

00:04:20 --> 00:04:24: Given these trade-offs, the Western resource advocates in

particular advocates

00:04:24 --> 00:04:27: that the type of cooling system should be evaluated and

selected on a case by case basis depending on the

00:04:30 --> 00:04:32: location of that data center.

00:04:35 --> 00:04:38: All in all, communities are afraid and are pushing back,

00:04:38 --> 00:04:39: which many of us already know.

00:04:41 --> 00:04:43: So we would like to know how do we employ

best practices to minimize impacts on and even support

communities

00:04:47 --> 00:04:50: that host data centers so that we can meet in

the middle.

00:04:54 --> 00:04:57: With that, we have a fantastic line up of speakers

00:04:57 --> 00:05:00: for you today, all of whom will discuss best practices

00:05:00 --> 00:05:03: for data centers, especially related to water since this is

00:05:03 --> 00:05:07: the Water Wise Development Coalition, but also with respect

to

00:05:07 --> 00:05:08: energy.

00:05:08 --> 00:05:12: Our speakers include Howard, New Craig, and I'm sure he'll

correct me, I'm on the pronunciation.

00:05:12 --> 00:05:14: And Bretton McCloskey from the Water Center at Penn.

00:05:14 --> 00:05:18: They are part of the Water Al Nexus Center of

Excellence, and they're going to be talking about principles

for

00:05:24 --> 00:05:26: sustainable water use by data centers.

00:05:26 --> 00:05:28: We'll then have Laura Metters from Apple.

00:05:29 --> 00:05:31: She's going to be talking about the many best practices

employed by Apple, which is wonderful.

00:05:31 --> 00:05:33: And Sarah Welton from the GRAS Foundation is going to

be talking about the standards that they're currently

developing for

00:05:40 --> 00:05:41: data centers.

00:05:41 --> 00:05:44: And we'll end with group discussion and resource sharing, and

00:05:44 --> 00:05:46: we hope that you stay with us until the end.

00:05:47 --> 00:05:49: With that, I'll turn it over to our first set

00:05:49 --> 00:05:51: of speakers, Howard and Brendan.

00:05:54 --> 00:05:55: Hi, everybody.

00:05:55 --> 00:05:57: Brendan, if we get the slides up, please.

00:05:57 --> 00:05:59: Yes, doing that right now.

00:06:01 --> 00:06:04: Welcome everyone and thank you to Marianne and Uli for

00:06:04 --> 00:06:06: putting together this webinar.

00:06:06 --> 00:06:07: This is really great.

00:06:07 --> 00:06:10: My name is Howard New Krug and I'm the executive

00:06:10 --> 00:06:11: director of the Water Center at Penn.

00:06:12 --> 00:06:15: In a few minutes you will hear from my colleague

00:06:15 --> 00:06:16: Brett McCluskey.

00:06:17 --> 00:06:19: We couldn't have picked a better time for this conversation.

00:06:19 --> 00:06:22: As Marianne indicated, the race to build data centers is

00:06:22 --> 00:06:25: and I just, you know, I just have to say

00:06:25 --> 00:06:27: this and put an excuse my the race for building

00:06:27 --> 00:06:29: data centers is really heating up.

00:06:30 --> 00:06:33: And we hear a lot about a is promises, its

00:06:33 --> 00:06:36: risks and its impacts on the workforce.

00:06:36 --> 00:06:40: And of course, we can't overlook the physical realities and

00:06:40 --> 00:06:44: that's these systems require massive amounts of land, energy and

00:06:44 --> 00:06:44: water.

00:06:45 --> 00:06:49: And while data centers might represent a small fraction of

00:06:49 --> 00:06:53: water use globally, the impact is felt intensely at the

00:06:53 --> 00:06:53: local level.

00:06:54 --> 00:06:58: That is, when a facility moves into a community, water

00:06:58 --> 00:07:01: scarcity is no longer a theory, it's an emergency.

00:07:01 --> 00:07:04: So our goal is to provide a road map for

00:07:04 --> 00:07:05: water sustainability.

00:07:06 --> 00:07:10: The Water AI Center of Excellence Excellence has just released

00:07:10 --> 00:07:14: a landmark report called Principles for Sustainable Water Use by

00:07:14 --> 00:07:15: Data Centers.

00:07:15 --> 00:07:18: It is a must read for anyone in this space.

00:07:18 --> 00:07:21: And in a few minutes, my colleague Brent McCluskey will

00:07:21 --> 00:07:24: present the key findings from that report.

00:07:24 --> 00:07:25: Next slide, please.

00:07:27 --> 00:07:29: First of all, a little bit about the water center

00:07:29 --> 00:07:29: at Penn.

00:07:29 --> 00:07:33: It is the University of Pennsylvania's hub for regional and global leadership in water leadership and policy.

00:07:33 --> 00:07:36: We are shaping the future of water during these times

00:07:36 --> 00:07:39: of great climate, economic and political uncertainties.

00:07:40 --> 00:07:43: And our work is our work is focusing on designing

00:07:43 --> 00:07:46: resiliency in this rapidly changing world, advancing new technologies, policies

00:07:46 --> 00:07:51: and practices, and most importantly to me, is building the

00:07:51 --> 00:07:55: next generation of water leadership.

00:07:55 --> 00:07:57: Next slide, please.

00:08:01 --> 00:08:05: So last October, 4 organizations joined in partnership to form

00:08:05 --> 00:08:07: the Water AI Nexus Center of Excellence.

00:08:08 --> 00:08:12: Water Environment Federation is a technical and educational nonprofit with

00:08:12 --> 00:08:16: more than 30,000 water quality professionals and brings its deep

00:08:16 --> 00:08:18: expertise and water sector transformation.

00:08:19 --> 00:08:23: Amazon, Amazon Web Services, I think we all know they

00:08:23 --> 00:08:26: have the this cloud and AI expertise and tangible examples

00:08:26 --> 00:08:30: of how data center development can occur sustainably.

00:08:31 --> 00:08:35: Leading utilities of the world is Global Water Utility gives

00:08:35 --> 00:08:39: us a global water utility perspectives from eighty of the

00:08:39 --> 00:08:43: most progressive water utility leaders in the world and give

00:08:43 --> 00:08:46: us help in shaping practical AI applications.

00:08:47 --> 00:08:50: And finally, the Water Center at Penn, we contribute the

00:08:50 --> 00:08:55: academic rigor, the research leadership, the the neutral convening location

00:08:55 --> 00:08:56: and policy insights.

00:08:57 --> 00:09:00: We believe our mission is that we believe that sustainable

00:09:00 --> 00:09:04: water management and digital infrastructure can reinforce each other in

00:09:04 --> 00:09:06: very positive ways.

00:09:06 --> 00:09:09: We call this duality water for AI and AI for

00:09:09 --> 00:09:10: water.

00:09:10 --> 00:09:13: Water for AI, which is what we're gonna touch on

00:09:13 --> 00:09:18: today is ensuring it's sustainable and resilient water practices that

00:09:18 --> 00:09:21: are a key element in citing building and operating data centers.

00:09:21 --> 00:09:22: And second, AI for the water industry, where the promise

00:09:22 --> 00:09:25: of AI will help transform the water industry worldwide.

00:09:26 --> 00:09:29: Next slide, please.

00:09:32 --> 00:09:35: So with that, I'm going to bring in Brenton McCluskey
00:09:35 --> 00:09:37: to do the heavy lifting and give us give us
00:09:37 --> 00:09:40: the results of the reports that was just produced.
00:09:40 --> 00:09:40: Brenton.
00:09:41 --> 00:09:42: Thanks, Howard.
00:09:42 --> 00:09:43: Really appreciate that.
00:09:43 --> 00:09:43: Hi, everybody.
00:09:43 --> 00:09:47: I'm Brenton McCluskey, Director of Strategic Development
Communications at the
00:09:47 --> 00:09:48: Water Center.
00:09:48 --> 00:09:52: I lead a few few things at the water center,
00:09:52 --> 00:09:55: one being the AI initiatives at the center.
00:09:55 --> 00:09:58: And we're so excited to be part of the the
00:09:58 --> 00:10:01: water AI Nexus and to be diving into some of
00:10:01 --> 00:10:04: the issues around water and AI.
00:10:04 --> 00:10:05: And as Howard mentioned, AI for water.
00:10:06 --> 00:10:10: We obviously know we're not the only, you know,
organization
00:10:10 --> 00:10:13: focusing on these types of issues, but we're excited to
00:10:13 --> 00:10:16: be part of the team that is is very
00:10:16 --> 00:10:20: deeply committed to finding solutions for the communities in
which
00:10:20 --> 00:10:21: we work.
00:10:23 --> 00:10:24: And again, my apology.
00:10:24 --> 00:10:27: I just want to say my apologies for the way
00:10:27 --> 00:10:28: the PowerPoint looks.
00:10:28 --> 00:10:30: This is the only way I could get my notes
00:10:30 --> 00:10:31: on the side of the screen as well.
00:10:31 --> 00:10:33: So hopefully you can.
00:10:33 --> 00:10:37: I do trust that everybody can see the entire screen,
00:10:37 --> 00:10:37: though.
00:10:39 --> 00:10:42: So first, as Howard had noted, just wanted again to
00:10:42 --> 00:10:46: reiterate that this Insight report was published at the end
00:10:46 --> 00:10:47: of September last year.
00:10:47 --> 00:10:50: It was doing the announcement of the Water AI Nexus
00:10:50 --> 00:10:51: Center of Excellence.
00:10:52 --> 00:10:55: It lays out a practical framework for how data centers
00:10:55 --> 00:10:59: and really large water and energy intensive developments I
think
00:10:59 --> 00:11:03: can be better stewards of water as digital infrastructure
scales.
00:11:05 --> 00:11:09: The four principles aren't meant to be abstract sustainability
goals,

00:11:09 --> 00:11:13: but rather their decision guides for citing design, operations, community engagement.

00:11:13 --> 00:11:14: And together they move the conversation from how do we reduce harm to how do we align digital growth and water smart, resilient development.

00:11:18 --> 00:11:21: So I'll walk through each principle briefly, focusing on what it means in practice for developers, utilities, public sector partners,

00:11:22 --> 00:11:24: and where this creates both risk reduction and long term value.

00:11:25 --> 00:11:29: I just also want to note that that the audience here as part of the ULI Water Wise Development Coalition,

00:11:29 --> 00:11:34: looks at promoting water efficient development and policies.

00:11:34 --> 00:11:38: And also note that I'm not a development professional, but come from the water practitioner viewpoint.

00:11:38 --> 00:11:38: So I apologize in advance for any confusion on what I've translated into development terms.

00:11:39 --> 00:11:42: So hopefully I don't butcher that too much.

00:11:42 --> 00:11:45: So first I really just want to jump into the

00:11:45 --> 00:11:49: first principle, which is improving design and and citing practices.

00:11:50 --> 00:11:52: This is really about treating data centers and large projects in general as infrastructure, not just buildings.

00:11:52 --> 00:11:55: I think sighting and cooling choices are long term climate and water and asset risk decisions that affect things like zoning, environmental permits, finding.

00:11:55 --> 00:11:57: I think maybe the development space refers to that as entitlements, but financing and community acceptance as well.

00:11:58 --> 00:12:00: The question isn't what's the cheapest land?

00:12:00 --> 00:12:02: I think what it is, what actually makes sense in this watershed and on this grid.

00:12:03 --> 00:12:06: And sometimes the right development decision is to shift intensity

00:12:06 --> 00:12:10: or phase differently or or not build at all.

00:12:11 --> 00:12:15: So just wanted to note a couple of of points here within this principle.

00:12:15 --> 00:12:17: 1, is this plan data centers as part of a

00:12:18 --> 00:12:22: larger water, energy and climate systems, not just a stand alone facilities.

00:12:22 --> 00:12:26: I think siding and cooling are long term resilience and

00:12:26 --> 00:12:28: asset risk decisions as well.

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00:13:09 --> 00:13:11:

00:13:12 --> 00:13:15: The second move from efficiency to impact.

00:13:15 --> 00:13:18: I think for example, measuring water and energy use per unit of computing and place, placing workloads where resources are

00:13:18 --> 00:13:22: most sustainable I think is important to note.

00:13:22 --> 00:13:25: And finally choose locations for shared value.

00:13:26 --> 00:13:28: I think sometimes choose not to build to avoid stranded

00:13:28 --> 00:13:31: assets and reduce long term environmental and community risks.

00:13:31 --> 00:13:35: So this really wraps up principle one.

00:13:36 --> 00:13:38: I just wanted to highlight a few examples here of

00:13:38 --> 00:13:42: of how this principle could be applied.

00:13:42 --> 00:13:44: I think you know, using watershed flood risk and grid

00:13:44 --> 00:13:48: capacity screening early in site selection, not after the land

00:13:48 --> 00:13:51: is already tied up, I think is important.

00:13:51 --> 00:13:54: Design campuses for phase or modular growth so

00:13:55 --> 00:13:58: development can

00:13:58 --> 00:14:00: track infrastructure capacity.

00:14:00 --> 00:14:01: Another example.

00:14:01 --> 00:14:04: And finally, maybe shift non time critical uses or building

00:14:04 --> 00:14:07: phases to lower stress regions or sites within a particular

00:14:08 --> 00:14:08: portfolio.

00:14:10 --> 00:14:14: Moving on to principle 2, reduce water consumption.

00:14:15 --> 00:14:19: This isn't just about better equipment, I think it's about

00:14:19 --> 00:14:24: managing water like a core performance and and entitlement risk

00:14:24 --> 00:14:24: metric.

00:14:25 --> 00:14:27: I'm thinking of all the permitting and things that need

00:14:27 --> 00:14:27: to happen.

00:14:28 --> 00:14:32: The water use effectiveness is a starting point but really

00:14:32 --> 00:14:32: matter.

00:14:32 --> 00:14:35: But what really matters is where water and energy per

00:14:35 --> 00:14:36: unit of activity.

00:14:36 --> 00:14:39: Especially as buildings and campuses get more energy intensive.

00:14:39 --> 00:14:40: I I think that's important to note.

00:14:42 --> 00:14:45: With modern controls and data developers and operators, they can

00:14:45 --> 00:14:48: now optimize water use in real time and make smarter

00:14:48 --> 00:14:51: trade-offs between water power and costs.

00:14:52 --> 00:14:56: And just a few pieces from this particular principle.

00:14:56 --> 00:15:00: One is is managing water like a core performance metric,

00:15:00 --> 00:15:01: not a by product.

00:15:01 --> 00:15:03: I think we need to optimize water per unit of computing work, for example using real time data sensors and

00:15:07 --> 00:15:08: AI driven operations.

00:15:09 --> 00:15:13: The other piece is designed for smart trade-offs, not single metrics.

00:15:13 --> 00:15:13:

00:15:13 --> 00:15:17: Hybrid and adaptive cooling can sometimes cut total system

00:15:17 --> 00:15:20: impacts across both water and energy.

00:15:21 --> 00:15:23: And I think the third piece here set reduction targets

00:15:24 --> 00:15:25: to drive innovation.

00:15:25 --> 00:15:28: Upscale is important thinking of small water use efficiency gains

00:15:28 --> 00:15:33: compounded into massive water savings across hyperscale infrastructure.

00:15:34 --> 00:15:36: Just a few examples here for this particular principle.

00:15:37 --> 00:15:40: I think setting project level water intensity targets tied to

00:15:40 --> 00:15:44: local water stress and utility constraints could be something useful

00:15:44 --> 00:15:46: here to think about how this is applied.

00:15:47 --> 00:15:51: Maybe using a hybrid or adaptive cooling and building systems

00:15:51 --> 00:15:54: that respond to weather, occupancy and grid conditions.

00:15:54 --> 00:15:56: Isn't another way this could be utilized?

00:15:57 --> 00:16:00: Or comparing total system impacts before choosing no on site

00:16:00 --> 00:16:03: water designs that may strain the grid or upstream water supplies.

00:16:04 --> 00:16:04: Isn't another way this could be applied?

00:16:09 --> 00:16:13: Moving on to the third principle, reuse and sustainability

00:16:13 --> 00:16:15: and sustainably sourced water.

00:16:15 --> 00:16:19: So this is about keeping water in circulation instead of

00:16:19 --> 00:16:22: treating it as a one time input to a building

00:16:22 --> 00:16:23: or district for real estate.

00:16:25 --> 00:16:28: Translating as real estate, I think this is as protecting

00:16:28 --> 00:16:32: drinking water supplies, maximizing on site and district scale reuse

00:16:32 --> 00:16:37: and leaning into drought resilient sources like recycled water, especially

00:16:37 --> 00:16:41: for large water intensive developments is important to keep in mind.

00:16:41 --> 00:16:41:

00:16:42 --> 00:16:44: And again, just some of the highlights of this particular principle.

00:16:45 --> 00:16:45:

00:16:46 --> 00:16:48: Keep water in circulation, not in a straight line.

00:16:48 --> 00:16:53: Maximizing reuse through higher cycles of concentration, closed loop liquid

00:16:53 --> 00:16:55: cooling and on site treatment.

00:16:55 --> 00:17:01: For example, prioritize non potable and drought resilient sources.

00:17:02 --> 00:17:05: So expanding use of recycled municipal water and rainwater to

00:17:05 --> 00:17:09: protect community drinking supplies is is important here.

00:17:10 --> 00:17:12: And and finally cascade water to its next best use.

00:17:12 --> 00:17:16: So reuse, for example, reuse spent cooling water for irrigation

00:17:16 --> 00:17:20: or other purposes to cut waste energy and infrastructure cost.

00:17:21 --> 00:17:25: Some examples of how we envision some of this being applied.

00:17:25 --> 00:17:26: Design projects to use recycled or non potable water for

00:17:27 --> 00:17:30: cooling, irrigation and other non potable demands.

00:17:30 --> 00:17:33: Add on site treatment or district systems to increase reuse

00:17:34 --> 00:17:37: and reduce freshwater demand.

00:17:37 --> 00:17:39: Capture and reuse condensate or rainwater where it pencils out

00:17:45 --> 00:17:48: and supports storm water goals, for example.

00:17:49 --> 00:17:53: And again, I know some of these examples that I'm

00:17:53 --> 00:17:57: sharing are already being implemented in in citing and design

00:17:57 --> 00:18:00: practices and how water is being reused as cooling in

00:18:01 --> 00:18:02: in closed loop systems.

00:18:04 --> 00:18:08: And finally, the 4th principle, which is engaged with communities.

00:18:08 --> 00:18:10: This is something that the water center at Penn is

00:18:10 --> 00:18:11: deeply committed to.

00:18:11 --> 00:18:14: I think you know, our role as an applied Research

00:18:15 --> 00:18:19: Center is, is really working with communities to better understand

00:18:19 --> 00:18:23: their water infrastructure needs and how we can assist them

00:18:23 --> 00:18:27: through technical expertise, financing and and other sort of hand

00:18:27 --> 00:18:31: holding that we can do to really help them along

00:18:31 --> 00:18:34: in terms of how they're improving or re evaluating their

00:18:34 --> 00:18:36: water infrastructure.

00:18:37 --> 00:18:40: So this particular principle, it's about being a long term

00:18:40 --> 00:18:44: neighbor and infrastructure partner, not just getting a project approved.

00:18:45 --> 00:18:49: I think early engagement with utilities, municipalities and communities reduces

00:18:50 --> 00:18:52: risks, speeds, approvals and surfaces.

00:18:52 --> 00:18:56: Shared investment opportunities and replenishment shouldn't be treated like an offset.

00:18:56 --> 00:18:57: It should be part of the core development and infrastructure strategy.

00:18:59 --> 00:19:00: So just a couple pieces of this of this principle I want to share is plan with communities and utilities, not around them.

00:19:00 --> 00:19:03: So use early ongoing engagement to understand local water stress

00:19:03 --> 00:19:06: and infrastructure constraints.

00:19:06 --> 00:19:07: The second piece here, treat replenishment as a core infrastructure

00:19:07 --> 00:19:11: strategy, not an afterthought.

00:19:11 --> 00:19:12: I think investing in watershed restoration, wash and system efficiency

00:19:13 --> 00:19:17: to return water to communities and ecosystems is important.

00:19:17 --> 00:19:18: And finally, focus on measurable durable impact, select projects carefully

00:19:23 --> 00:19:27: that use credible methods and monitor outcomes over time.

00:19:28 --> 00:19:32: So just a few examples of how we envision this being applied.

00:19:32 --> 00:19:35: I think 1 would be coordinating early with water and wastewater utilities, capacity and timing and needed upgrades.

00:19:36 --> 00:19:39: I think we're hearing a lot of that through shared benefit agreements and community partnerships between tech companies and and

00:19:39 --> 00:19:40: communities.

00:19:40 --> 00:19:43: I think there is not a standardized policy of how this is being applied.

00:19:43 --> 00:19:46: So it's important to think of how we can can create a standard policy where there is actionable engagement between

00:19:46 --> 00:19:49: the data center sitting and in the communities itself and their shared water resources.

00:19:49 --> 00:19:53: I think another example would be Co invest in projects like leak detection, stormwater management, or watershed restoration tied to

00:19:53 --> 00:19:54: growth areas.

00:19:54 --> 00:19:57: Another use measurable transparent methods to show how projects return

00:19:57 --> 00:19:58: water benefits to the community.

00:19:58 --> 00:20:01: So those are the, those are the four principles we

00:20:02 --> 00:20:07:

00:20:07 --> 00:20:12:

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00:20:25 --> 00:20:29:

00:20:29 --> 00:20:31:

00:20:32 --> 00:20:35:

00:20:35 --> 00:20:39: just really wanted to quickly outline that I think to
00:20:39 --> 00:20:42: help shape the conversation today.
00:20:43 --> 00:20:47: Again, some of these are being already implemented.
00:20:47 --> 00:20:49: I think a lot of the communities and partners that
00:20:49 --> 00:20:52: we're working with, you know, these are being embedded in
00:20:52 --> 00:20:55: those in those conversations and best practices that they're
that
00:20:55 --> 00:20:56: they're doing.
00:20:56 --> 00:20:59: So I just want to recognize that these aren't, these
00:21:00 --> 00:21:01: aren't all new.
00:21:01 --> 00:21:03: These are, these are things that that are happening.
00:21:03 --> 00:21:06: But I think there are Nuggets here that are important
00:21:07 --> 00:21:10: that we keep in mind as we build data centers
00:21:10 --> 00:21:14: and site and, and better understand the water usage issues.
00:21:14 --> 00:21:16: So at that, I'll, I'll leave it.
00:21:17 --> 00:21:19: Our contact information is here.
00:21:20 --> 00:21:21: Would love to to hear from you all.
00:21:21 --> 00:21:24: If there's any questions or how how the Water center
00:21:24 --> 00:21:27: at Penn can be of assistance, please let us know.
00:21:28 --> 00:21:30: Thank you so much, Brenton and Howard.
00:21:30 --> 00:21:34: I'm wondering, Brenton, if you don't mind sharing the link
00:21:34 --> 00:21:36: to the report in the chat box so that people
00:21:36 --> 00:21:37: can easily grab it?
00:21:38 --> 00:21:41: And in the interest of time, we're going to go
00:21:41 --> 00:21:43: to the next speaker, but I would love for people
00:21:43 --> 00:21:47: to put their questions for speakers as they're going in
00:21:47 --> 00:21:49: the chat box or you could use the Q&A box,
00:21:49 --> 00:21:52: but I think the chat box might be the easiest
00:21:52 --> 00:21:52: here.
00:21:54 --> 00:21:57: And then speakers are welcome to respond in the chat
00:21:57 --> 00:21:59: box, or we can hold on to them until the
00:21:59 --> 00:22:01: end and have a group discussion about them.
00:22:02 --> 00:22:03: Thank you, guys.
00:22:03 --> 00:22:04: OK.
00:22:04 --> 00:22:08: Our next speaker is Laura Metters from Apple.
00:22:08 --> 00:22:10: Laura, would you like me to share your slides?
00:22:11 --> 00:22:13: Yeah, I was thinking that would be great.
00:22:13 --> 00:22:16: I am not confident in my ability for my system
00:22:16 --> 00:22:17: to work with Zoom.
00:22:18 --> 00:22:19: So that sounds good.
00:22:21 --> 00:22:22: Is this full screen for you?
00:22:23 --> 00:22:24: No, that's it's not.

00:22:25 --> 00:22:27: OK one SEC while I fix this.

00:22:28 --> 00:22:30: Now it's full screen, but it was one ahead.

00:22:31 --> 00:22:32: Yeah, one SEC.

00:22:39 --> 00:22:39: About that.

00:22:39 --> 00:22:40: Yeah, there we go.

00:22:40 --> 00:22:41: That's perfect.

00:22:42 --> 00:22:44: So thank you for having me.

00:22:44 --> 00:22:45: I'm Laura Metters.

00:22:45 --> 00:22:48: I'm the Global Sustainability Program's lead here at Apple and

00:22:48 --> 00:22:52: excited to talk about advancing water stewardship and data centers.

00:22:52 --> 00:22:54: So next slide.

00:22:58 --> 00:23:00: So it's it's funny, I used to sort of present

00:23:00 --> 00:23:03: this slide and you know, it would be a surprise

00:23:03 --> 00:23:06: to everyone why water had anything to do with Apple.

00:23:06 --> 00:23:08: I think now in the last couple of years and

00:23:08 --> 00:23:11: the amount of attention that data centers and water it

00:23:11 --> 00:23:14: and energy issues have gotten, it's no longer a surprise.

00:23:14 --> 00:23:18: But in the last sort of three or four years,

00:23:18 --> 00:23:21: we've really brought water to more of a forefront in

00:23:21 --> 00:23:25: terms of the environmental issues that we're looking at and

00:23:25 --> 00:23:27: and developing strategies for.

00:23:27 --> 00:23:28: At Apple.

00:23:28 --> 00:23:32: We moved upstream obviously into developing our own chips and

00:23:32 --> 00:23:35: then we've got a number of services now that run

00:23:35 --> 00:23:37: out of our data centers as well as Kolos and

00:23:37 --> 00:23:39: and cloud services.

00:23:39 --> 00:23:43: So water has become something now you know, equivalent to

00:23:43 --> 00:23:46: energy in terms of things that we plan for and

00:23:46 --> 00:23:49: and develop responsible strategies for.

00:23:50 --> 00:23:52: So next slide please.

00:23:55 --> 00:23:57: But how we use water is different throughout our value

00:23:57 --> 00:23:57: chain.

00:23:57 --> 00:24:00: So I think we're one of the few tech companies

00:24:00 --> 00:24:04: that actually has an enterprise level water strategy.

00:24:04 --> 00:24:07: So we manage water both in our supply chain and

00:24:07 --> 00:24:10: have a clean water program there that we work with

00:24:10 --> 00:24:14: our suppliers on as well as in our corporate facilities.

00:24:14 --> 00:24:15: And that's the world that I look after.

00:24:15 --> 00:24:20: So our data centers, our corporate offices, retail stores and

00:24:20 --> 00:24:21: distribution centers.

00:24:21 --> 00:24:25: And if you click one more, hopefully a little things should show up.

00:24:25 --> 00:24:26:

00:24:26 --> 00:24:27: There we go.

00:24:27 --> 00:24:29: So, so that is my world.

00:24:29 --> 00:24:32: And the way that we use water there is different

00:24:32 --> 00:24:34: from how we use it in the supply chain in

00:24:34 --> 00:24:37: so far as it tends to be more consumptive.

00:24:37 --> 00:24:39: So in our supply chain, it's processed water.

00:24:39 --> 00:24:42: We can get a lot of benefit out of reuse

00:24:42 --> 00:24:47: and we're not losing a lot of water through evaporation.

00:24:47 --> 00:24:50: It's different obviously in data centers and the rest of

00:24:50 --> 00:24:51: our corporate facilities.

00:24:52 --> 00:24:53: Next slide.

00:24:56 --> 00:25:00: Our overarching goal is really to improve water security in

00:25:00 --> 00:25:02: the places that we operate and we focus on three

00:25:02 --> 00:25:03: elements of that.

00:25:04 --> 00:25:08: We're looking at water, freshwater availability, which is, you know,

00:25:08 --> 00:25:11: does a site to have her or region have enough water for both nature and for people.

00:25:11 --> 00:25:14:

00:25:14 --> 00:25:17: And then quality, which is, is that water fit for purpose?

00:25:17 --> 00:25:20: And are we using water that is maybe, you know,

00:25:20 --> 00:25:24: clean to a higher degree than we really need for

00:25:24 --> 00:25:25: what our uses?

00:25:25 --> 00:25:26: And then lastly, access.

00:25:26 --> 00:25:29: You can have water availability, you can have good water

00:25:29 --> 00:25:33: quality, but you can still have communities that lack access to that water.

00:25:33 --> 00:25:33:

00:25:34 --> 00:25:38: And that's neither good for, you know, the community or

00:25:38 --> 00:25:39: our operations.

00:25:40 --> 00:25:40: Next slide.

00:25:43 --> 00:25:47: So the way that we approach our overall water strategy

00:25:47 --> 00:25:49: is through 5 pillars.

00:25:50 --> 00:25:52: And I tend to think about this as really on

00:25:52 --> 00:25:55: the left side here, moving from inside the fence line

00:25:55 --> 00:25:57: to on the right side outside the fence line.

00:25:58 --> 00:26:01: So when I started the corporate water program about 10

00:26:01 --> 00:26:04: years ago now at Apple, one of the first things

00:26:04 --> 00:26:07: I did was introduce a water risk analysis into our

00:26:07 --> 00:26:08: design phase.

00:26:08 --> 00:26:10: So our site selection that was, you know, one of the things that we would look at in addition to all the other things that that we typically look at in site selection.

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00:26:15 --> 00:26:16:

00:26:16 --> 00:26:19: And that includes everything from, you know, is there water available, Is there a service provider?

00:26:19 --> 00:26:22:

00:26:22 --> 00:26:26: But also are you going to be a significant portion of a basin or a or municipalities water demand and is that going to cause other issues?

00:26:26 --> 00:26:30:

00:26:30 --> 00:26:33:

00:26:34 --> 00:26:36: Is that, you know, going to put a target on your back or being outsized use?

00:26:36 --> 00:26:38:

00:26:38 --> 00:26:41: So those are the types of things that we kind of consider at that early stage.

00:26:41 --> 00:26:42:

00:26:42 --> 00:26:46: And then for our existing facilities, we're always looking to improve our efficiency, look for new conservation opportunities, bring an

00:26:46 --> 00:26:50:

00:26:51 --> 00:26:54: alternative sources where we can that's, you know, an ongoing process.

00:26:54 --> 00:26:55:

00:26:55 --> 00:26:59: The third pillar site water stewardship is that inflection point between inside the fence line and outside the fence line.

00:26:59 --> 00:27:02:

00:27:02 --> 00:27:05: And this is when we start to engage with other

00:27:05 --> 00:27:08: water users in the basins that we're operating in and,

00:27:08 --> 00:27:11: you know, understand what their concerns are.

00:27:11 --> 00:27:14: And then begin to move into the 4th and the

00:27:14 --> 00:27:18: 5th pillars where we look at, well, what investments can

00:27:18 --> 00:27:21: we make or what engagement can we have in the

00:27:21 --> 00:27:24: community to help address shared water concerns.

00:27:25 --> 00:27:30: And then our final pillar is leadership and advocacy, which

00:27:30 --> 00:27:33: is where we then try to engage in helping to

00:27:33 --> 00:27:38: develop standards or local policies, you know, state or even

00:27:38 --> 00:27:42: national level policies, if that really ever becomes much of

00:27:42 --> 00:27:43: an opportunity.

00:27:45 --> 00:27:47: And we've we've also done a little bit of work

00:27:47 --> 00:27:51: around sharing best practice as to how we've approached our

00:27:51 --> 00:27:54: water strategy and even some white papers that we put

00:27:54 --> 00:27:58: out around sort of how you think about doing replenishment

00:27:58 --> 00:27:59: projects, for example.

00:28:00 --> 00:28:01: Next slide.

00:28:04 --> 00:28:07: So we have three public water goals that we've announced

00:28:07 --> 00:28:08: in our environmental progress reports.

00:28:10 --> 00:28:13: One is to certify all of our owned and operated

00:28:13 --> 00:28:18: data centers to Alliance for Water Stewardship standard by 2025.

00:28:18 --> 00:28:21: I'll talk a little bit about that today because that's

00:28:21 --> 00:28:23: kind of really the framework for how we approach water

00:28:23 --> 00:28:24: stewardship in our data centers.

00:28:25 --> 00:28:28: And then the other two are replenishing 100% of our

00:28:28 --> 00:28:32: freshwater withdrawals in high stress locations by 20-30.

00:28:32 --> 00:28:34: So we're we're well on our way there.

00:28:34 --> 00:28:38: And then our supply chain, we're aiming to achieve a

00:28:38 --> 00:28:41: 50% reuse rate rate along those suppliers.

00:28:42 --> 00:28:43: Next slide.

00:28:45 --> 00:28:50: So shifting to data center specifically, how do we think

00:28:50 --> 00:28:51: about them?

00:28:51 --> 00:28:53: And I think you can probably click one more here.

00:28:54 --> 00:28:58: Sorry, there's some animation that was built in here, maybe

00:28:58 --> 00:28:59: it's not.

00:29:00 --> 00:29:00: Can you go back one?

00:29:05 --> 00:29:07: OK, well you were supposed to see locations of data

00:29:08 --> 00:29:08: centers here.

00:29:09 --> 00:29:12: We have 8 owned and operated data centers.

00:29:12 --> 00:29:15: So I know people, you know, often think about Apple

00:29:15 --> 00:29:16: as one of the hyper scalers.

00:29:16 --> 00:29:18: We're not actually in the same way.

00:29:18 --> 00:29:21: We're not out there building, you know, 10's and hundreds

00:29:21 --> 00:29:22: of new data centers.

00:29:23 --> 00:29:27: We have five data centers owned and operated data centers

00:29:27 --> 00:29:30: in the US and then three internationally, 2 in China

00:29:30 --> 00:29:32: and one in Denmark.

00:29:32 --> 00:29:35: And we have tended to have a strategy where we

00:29:36 --> 00:29:40: invest significantly in a in a location, in a community

00:29:40 --> 00:29:43: and then grow on that site for many years.

00:29:43 --> 00:29:45: So that, that's the pattern that we've seen.

00:29:46 --> 00:29:49: But data centers in particular are discrete water users.

00:29:49 --> 00:29:55: They're often in highly stressed water locations and they are

00:29:56 --> 00:29:59: often also in remote locations.

00:29:59 --> 00:30:03: So they're, they're quite visible and they're significant parts of

00:30:03 --> 00:30:03: a basin.

00:30:03 --> 00:30:07: So when we were developing our overall strategy, we knew

00:30:07 --> 00:30:11: that data centers needed a particular focus and and

00:30:11 --> 00:30:15: something

00:30:15 --> 00:30:16: maybe beyond what we were doing for the rest of

our real estate portfolio.

00:30:18 --> 00:30:18: Next slide.

00:30:22 --> 00:30:26: So to Howard and and Bretton's comments earlier about, you know, what sort of framework or standard can you use to approach this work?

00:30:30 --> 00:30:31: We looked at what guidance was out there to help us approach responsible water stewardship in our data centers and

00:30:38 --> 00:30:41: we landed on the Alliance for Water Stewardship as really

00:30:41 --> 00:30:46: the most robust, holistic, internationally recognized certification standard.

00:30:46 --> 00:30:49: We'd actually begun working with the standard on our supply chain side of the house a few years earlier and

00:30:49 --> 00:30:52: had gotten a number of our suppliers to achieve certification.

00:30:52 --> 00:30:55: So we thought, you know, we should really understand how

00:30:56 --> 00:30:58: to do this ourselves and, and decided to apply it

00:30:58 --> 00:31:01: to one of our data centers and see what the

00:31:01 --> 00:31:03: process was like and what it would teach us.

00:31:03 --> 00:31:05: And the standard has sort of five steps that you

00:31:09 --> 00:31:10: work through.

00:31:10 --> 00:31:13: They're, you know, kind of what you would expect to

00:31:13 --> 00:31:17: basically gather data through to develop a plan, implement it, evaluate and then report on it.

00:31:17 --> 00:31:19: But it also what we liked about it was that

00:31:20 --> 00:31:23: it has five outcomes that you're really seeking to address

00:31:23 --> 00:31:27: and they're good water governance, maintaining a sustainable water balance,

00:31:27 --> 00:31:32: improving water quality, maintaining good water quality, protecting important water

00:31:32 --> 00:31:38: related areas, and then ensuring safe water sanitation and hygiene for all.

00:31:42 --> 00:31:43: So you're really hitting the things that are the drivers

00:31:43 --> 00:31:46: of water stress.

00:31:46 --> 00:31:47: And we learned from our experience with suppliers that certifying

00:31:49 --> 00:31:53: to AWS was really helpful to demonstrate to external parties,

00:31:53 --> 00:31:57: including governments and and other stakeholders that we understand the

00:31:57 --> 00:32:01: the environment that we're operating in.

00:32:01 --> 00:32:03: We're engaged with water issues and and stakeholders there and

00:32:06 --> 00:32:09: that we have a plan to address our own water

00:32:09 --> 00:32:11: challenges as well as those in the watershed.

00:32:11 --> 00:32:15: So it helps build both physical and reputational resilience

where
00:32:15 --> 00:32:16: we operate.
00:32:17 --> 00:32:18: Next slide.
00:32:20 --> 00:32:23: So we began in 2020 with our Prime Bill data center as our test case.
00:32:23 --> 00:32:25:
00:32:25 --> 00:32:27: It took us about a year to go through the
00:32:27 --> 00:32:30: process and then we got a system in place.
00:32:30 --> 00:32:34: We developed some replicable materials and we then over the
00:32:34 --> 00:32:37: course of the last few years have been able to
00:32:37 --> 00:32:41: certify all of our owned and operated data centers to
00:32:41 --> 00:32:45: the standard that actually Waukee should be June 2025.
00:32:45 --> 00:32:49: I'm just realizing not 2026, but we did achieve that
00:32:49 --> 00:32:52: in 2025, which is our goal and we learned a
00:32:52 --> 00:32:54: lot along the way.
00:32:54 --> 00:32:55: Next slide.
00:32:58 --> 00:33:01: So after we did this at, at all of those
00:33:01 --> 00:33:05: sites, we realized that the the principles to I think
00:33:05 --> 00:33:10: having a successful holistic water strategy, we're really starting with
00:33:10 --> 00:33:15: a water risk evaluation, understanding how much water is available,
00:33:15 --> 00:33:17: what purposes it's used for in the basin.
00:33:19 --> 00:33:20: And as I said earlier, you know how much of
00:33:20 --> 00:33:22: the basin use you're going to be.
00:33:23 --> 00:33:26: We use large models like WR, Aqueduct and then we
00:33:26 --> 00:33:31: go deeper on using local consultants or models to understand
00:33:31 --> 00:33:34: really what's going on in a basin.
00:33:34 --> 00:33:37: And I'll just share a couple of examples where we
00:33:37 --> 00:33:41: started with a high level model like like Aqueduct and
00:33:41 --> 00:33:44: we thought that one driver was going to be the
00:33:44 --> 00:33:45: issue.
00:33:45 --> 00:33:49: Prineville for example, we thought overall water scarcity was going
00:33:49 --> 00:33:50: to be our issue there.
00:33:50 --> 00:33:53: And then actually as we moved into the sort of
00:33:53 --> 00:33:57: second pillar here, engaging stakeholders, we found that in fact
00:33:57 --> 00:34:00: it wasn't so much overall water scarcity, it was the
00:34:00 --> 00:34:04: seasonality of water use and data centers, particularly in kind
00:34:04 --> 00:34:08: of high desert environment, like they're use water in the
00:34:08 --> 00:34:11: summer, but they don't use much water the rest of

00:34:11 --> 00:34:12: the year.

00:34:12 --> 00:34:15: So our use was kind of compounding with the rest of the summer peak.

00:34:15 --> 00:34:16:

00:34:16 --> 00:34:19: And so we ended up addressing that issue, not the

00:34:19 --> 00:34:22: issue we thought maybe we would be addressing before we

00:34:22 --> 00:34:23: did this process.

00:34:24 --> 00:34:28: Conversely, in Maine, North Carolina, which I'll do a little

00:34:28 --> 00:34:31: bit of a deep dive on next, we found that

00:34:31 --> 00:34:34: Aqueduct had identified it as an area of high water

00:34:34 --> 00:34:35: scarcity as well.

00:34:36 --> 00:34:39: And as we started talking with stakeholders, we realized actually

00:34:39 --> 00:34:43: it's a very highly regulated water system water basin.

00:34:43 --> 00:34:44: It's managed for energy.

00:34:44 --> 00:34:49: And so, and even in our municipality, the municipalities needing

00:34:49 --> 00:34:52: like 50% less water today than they were in the

00:34:52 --> 00:34:52: 1980s.

00:34:52 --> 00:34:55: So, you know, there it was really actually about water

00:34:55 --> 00:34:57: quality that was the issue.

00:34:57 --> 00:35:00: And so we shifted gears and, and our replenishment work

00:35:00 --> 00:35:04: has really, you know, been oriented in that direction.

00:35:04 --> 00:35:06: So a lot of learning is that that we got

00:35:06 --> 00:35:10: from the engaging stakeholders, even though it wasn't necessarily the

00:35:10 --> 00:35:13: most comfortable thing, you know, to start doing to to

00:35:13 --> 00:35:17: go beyond the typical water service providers and municipalities that

00:35:17 --> 00:35:19: you might usually talk with.

00:35:21 --> 00:35:24: And then third, you know, we developed water stewardship plans

00:35:24 --> 00:35:27: for all of our sites and they're pretty specific.

00:35:27 --> 00:35:30: They essentially have a target related to each of the

00:35:30 --> 00:35:31: outcomes for AWS.

00:35:31 --> 00:35:33: So we're not trying to do everything.

00:35:33 --> 00:35:36: We're just trying to focus in on what's most important

00:35:36 --> 00:35:39: and have specific metrics that we can evaluate year on

00:35:39 --> 00:35:41: year and see how we're doing.

00:35:41 --> 00:35:45: And then finally, you know, doing that annual evaluation, resetting

00:35:45 --> 00:35:48: your your plan every year and reporting out helps build

00:35:48 --> 00:35:52: transparency and trust just, you know, with the communities that

00:35:52 --> 00:35:55: we're operating in as well as publicly when we report

00:35:55 --> 00:35:57: that in our environmental progress report.

00:35:58 --> 00:36:01: And so I think that's just continued to to bolster

00:36:01 --> 00:36:04: our relationships and reputation and ability to work in the

00:36:04 --> 00:36:06: places where we have data centers.

00:36:08 --> 00:36:09: And then next slide.

00:36:12 --> 00:36:15: So finally, I just wanted to share an example of

00:36:15 --> 00:36:18: what this looks like in practical terms.

00:36:18 --> 00:36:21: And I picked our main North Carolina data center.

00:36:21 --> 00:36:25: It's one of our older data centers, oldest maybe it's

00:36:25 --> 00:36:27: been online since 2012.

00:36:27 --> 00:36:30: And so a lot of decisions about, you know, site

00:36:30 --> 00:36:33: selection and all that, they were already made, but we

00:36:33 --> 00:36:35: do continue to grow at this site.

00:36:35 --> 00:36:38: And so, you know, we looked at on site water

00:36:38 --> 00:36:43: management, we found the opportunities that we could affect by

00:36:43 --> 00:36:48: you know, improving our cooling controls, cooling approach, using rainwater

00:36:48 --> 00:36:53: harvesting for supplemental water, use of toilet flushing and things

00:36:53 --> 00:36:54: like that.

00:36:54 --> 00:36:59: And then we implemented A sphagnum Moss based water treatment

00:36:59 --> 00:37:03: project that helped reduce the chemical inputs that we were

00:37:04 --> 00:37:07: using for bio science and things like that.

00:37:07 --> 00:37:09: So we address water quality on site.

00:37:10 --> 00:37:13: Then we as a result of our stakeholder engagement, we

00:37:14 --> 00:37:18: got connected with the Catawba Watery Water Management Group, which

00:37:18 --> 00:37:22: is this sort of organic basin management group that exists

00:37:22 --> 00:37:26: there that is looking at all of the water concerns

00:37:26 --> 00:37:27: in the region.

00:37:27 --> 00:37:30: We joined their advisory committee to really, you know, learn

00:37:30 --> 00:37:31: what they were concerned about.

00:37:32 --> 00:37:37: We ended up supporting their source water protection program, which

00:37:37 --> 00:37:41: is really responsible for identifying what the water challenges are

00:37:41 --> 00:37:45: and you know, what areas of land need protection or

00:37:45 --> 00:37:49: what opportunities might improve water quality in the basin.

00:37:50 --> 00:37:54: And we partner with them to look for replenishment projects.

00:37:54 --> 00:37:57: So we essentially bet all the replenishment projects that we're

00:37:57 --> 00:37:59: looking to do through them to say, is this meeting

00:37:59 --> 00:38:01: an overall base and goal or not?

00:38:01 --> 00:38:03: And that's been a great partnership.

00:38:04 --> 00:38:06: And we've actually ended up doing 2 projects that that

00:38:06 --> 00:38:08: so far that we've run through that.

00:38:09 --> 00:38:13: And then we also went kind of outside the replenishment

00:38:13 --> 00:38:17: project work that we're doing to help collaborate with the

00:38:17 --> 00:38:23: local Research Triangle Institute, world class research institution where we

00:38:23 --> 00:38:27: help them translate their local, it's called a waterfall model,

00:38:28 --> 00:38:31: their hydrological model into how that would be used to

00:38:32 --> 00:38:36: generate or to sorry to evaluate volumetric water benefits, which

00:38:36 --> 00:38:41: is what corporates use to kind of quantify their replenishment projects.

00:38:41 --> 00:38:41:

00:38:42 --> 00:38:45: And and that was very useful to kind of validate

00:38:45 --> 00:38:48: the projects that we were looking at as well as

00:38:48 --> 00:38:51: ended up giving a grant to the Catawba River keepers

00:38:51 --> 00:38:55: who were looking to just monitor ongoing water quality in

00:38:55 --> 00:38:55: the basin.

00:38:56 --> 00:38:58: So a lot of work in the in that strategic

00:38:58 --> 00:39:00: partnerships and engagement.

00:39:00 --> 00:39:03: And then finally, as I said, we've actually invested in

00:39:03 --> 00:39:07: a number of impactful water replenishment projects there and are

00:39:07 --> 00:39:08: continuing to look for more.

00:39:09 --> 00:39:12: So I particularly like this location in this case study

00:39:12 --> 00:39:16: because we have been able to have that 360 view

00:39:16 --> 00:39:17: and approach.

00:39:17 --> 00:39:20: And you know, hopefully this is something that we can

00:39:20 --> 00:39:22: replicate in other basins too.

00:39:23 --> 00:39:26: So the last slide is just my closing slide.

00:39:27 --> 00:39:29: Thank you, you know very much for having me and

00:39:29 --> 00:39:30: happy to answer any questions.

00:39:34 --> 00:39:35: Thank you so much, Laura.

00:39:36 --> 00:39:39: I think in the interest of time again, we're going

00:39:39 --> 00:39:42: to have people put their questions in the chat box

00:39:42 --> 00:39:45: and then our speakers are welcome to respond to those

00:39:45 --> 00:39:47: either in the chat box or we can save those

00:39:47 --> 00:39:49: questions for the group discussion.

00:39:50 --> 00:39:53: Laura, I'm wondering if you don't mind sharing the link

00:39:54 --> 00:39:57: to the Apple Water strategy that came out in 2025

00:39:57 --> 00:40:00: and that way if people are interested in more details,

00:40:00 --> 00:40:03: they can find those in the water strategy?

00:40:04 --> 00:40:04: Yeah, I'll do that.

00:40:05 --> 00:40:05: Excellent.

00:40:05 --> 00:40:06: Thank you.

00:40:08 --> 00:40:11: Our final speaker today is Sarah Walton with the GRISP

00:40:11 --> 00:40:12: Foundation.

00:40:14 --> 00:40:15: You've seen my screen?

00:40:16 --> 00:40:17: My slide?

00:40:17 --> 00:40:19: Yep, looks like the acoustic.

00:40:19 --> 00:40:19: Terrible.

00:40:19 --> 00:40:21: Do I still sound like I'm drowning?

00:40:22 --> 00:40:23: No, it's it sounds fine.

00:40:23 --> 00:40:24: Go ahead.

00:40:24 --> 00:40:27: OK, well, that was it was I was, this is

00:40:27 --> 00:40:27: intentional.

00:40:27 --> 00:40:30: I wanted to be on brand like I was underwater.

00:40:30 --> 00:40:32: You can just pretend like I am a, I'm a

00:40:32 --> 00:40:35: mermaid as my children would, would wish.

00:40:35 --> 00:40:38: Well, I, I kind of feel like I'm not adding

00:40:38 --> 00:40:41: a whole lot of value because Brenton said sort of

00:40:41 --> 00:40:44: all the right things and then Laura followed up with

00:40:44 --> 00:40:46: all the way to execute all the right things.

00:40:46 --> 00:40:50: So I'm hopefully just kind of reiterating a lot of

00:40:50 --> 00:40:54: the, the messages that have already been been shared.

00:40:55 --> 00:40:58: But you know, with that said, I, I'll walk you

00:40:59 --> 00:41:02: guys through kind of three parts to kind of the

00:41:02 --> 00:41:06: background to the, the data center standard that that is

00:41:07 --> 00:41:11: under development where I sit within the Gres Foundation and

00:41:11 --> 00:41:15: kind of what led to this standard and the fruition

00:41:15 --> 00:41:16: of the standards.

00:41:17 --> 00:41:20: And then if I've haven't put you, if I haven't

00:41:20 --> 00:41:22: drowned you, if I haven't put you to sleep by

00:41:23 --> 00:41:26: then I can give you a few pieces of information

00:41:26 --> 00:41:29: to kind of string you, string you along like I've

00:41:29 --> 00:41:31: hook and hook and hook and sinker.

00:41:31 --> 00:41:32: Is that what it is?

00:41:32 --> 00:41:33: Anyway, that's fine.

00:41:33 --> 00:41:34: Obviously, I don't finish.

00:41:35 --> 00:41:39: So the governance, we at the Graves Foundation felt like

00:41:39 --> 00:41:43: it was really important to have strong governance around this

00:41:43 --> 00:41:44: standard.

00:41:44 --> 00:41:49: Obviously, data centers bring a lot of sensitivity as it

00:41:49 --> 00:41:54: relates to sort of stakeholder engagement and making sure that you have that community involved.

00:41:54 --> 00:41:57: Because as many of us have have seen, there can be cases where the community says no and it becomes

00:42:00 --> 00:42:04: a no go, which if we're thinking about how to

00:42:04 --> 00:42:07: make progress, we want to make progress in a in

00:42:07 --> 00:42:10: an effective and collaborative way.

00:42:10 --> 00:42:12: And so again, adding to the validity behind the standard

00:42:12 --> 00:42:15: was really important to us.

00:42:15 --> 00:42:17: So I sit over the Griz Foundation, which is an

00:42:17 --> 00:42:21: independent nonprofit organization led by the industry, created for the

00:42:21 --> 00:42:27: industry.

00:42:27 --> 00:42:28: So we our intention is to create constructive dialogue between

00:42:28 --> 00:42:33: investors and managers so that again we can make progress

00:42:33 --> 00:42:38: in a, you know, in a really effective and thoughtful

00:42:38 --> 00:42:42: way.

00:42:42 --> 00:42:43: We're LED primarily by real asset investors for the lived

00:42:43 --> 00:42:47: experience that Gross has had is that investors, the asset

00:42:48 --> 00:42:52: owners, these large pension funds in particular are creating that

00:42:52 --> 00:42:57: derived demand for standard standardization around asset investment.

00:42:57 --> 00:43:02: And then lastly, it's important to denote, to note that

00:43:03 --> 00:43:07: the Gres Foundation is globally representative.

00:43:07 --> 00:43:10: We've got, it's probably nearing 150 volunteers at this juncture,

00:43:11 --> 00:43:15: but we've got representation from around the world.

00:43:15 --> 00:43:19: And as you can see on the right hand side

00:43:19 --> 00:43:22: were made-up by a foundation board that overseas standards committees.

00:43:22 --> 00:43:26: And then we've got ERT expert research group members as

00:43:26 --> 00:43:30: well as working group members that again stand behind win

00:43:30 --> 00:43:34: the standards and help us to iterate and improve and

00:43:34 --> 00:43:37: evolve the standards year over year.

00:43:37 --> 00:43:40: So why are we here?

00:43:42 --> 00:43:43: What's, what's the problem we're trying to solve?

00:43:43 --> 00:43:46: As you can probably sort of hear you've, you've, you've

00:43:47 --> 00:43:52: read as we've, we've seen the, the heating up of

00:43:52 --> 00:43:55: data center industry.

00:43:56 --> 00:43:57: You know, the data center managers want investors to ask

00:43:59 --> 00:44:02: and this isn't exclusive to data centers.

00:44:02 --> 00:44:04:

00:44:04 --> 00:44:05: This is all real assets.

00:44:06 --> 00:44:11: Managers want investors to ask questions that make sense and

00:44:11 --> 00:44:16: that they can answer and that again, are productive investors.

00:44:16 --> 00:44:19: In turn, I want to know what they're talking about.

00:44:19 --> 00:44:21: And so we want to have a shared language because

00:44:21 --> 00:44:25: it's not very productive to be talking about apples and

00:44:25 --> 00:44:27: then someone asks you about oranges.

00:44:27 --> 00:44:30: You want to be using a shared language and you

00:44:30 --> 00:44:33: want to be answering the questions that are important and

00:44:33 --> 00:44:37: that are driving the the investment decision useful conversations.

00:44:38 --> 00:44:41: So both of these groups want a common language to

00:44:41 --> 00:44:44: have comparability and the option to be able to look

00:44:44 --> 00:44:48: at not only today and what's happening and what are

00:44:48 --> 00:44:51: we designing today, but what does that look like year

00:44:51 --> 00:44:55: over year or in other cases at different, at different

00:44:55 --> 00:44:59: points when you're investing, when you're fundraising, when you're acquiring,

00:45:00 --> 00:45:01: when you're developing.

00:45:01 --> 00:45:04: So at those junctures, you want to be able to

00:45:04 --> 00:45:07: have a shared language and be able to talk, talk

00:45:07 --> 00:45:11: about the performance that you were expecting and where you,

00:45:11 --> 00:45:14: you know, you maybe not hitting the mark and how

00:45:14 --> 00:45:16: you can improve to hit the mark.

00:45:17 --> 00:45:21: So I talked about this, you know, there's, there's sort

00:45:21 --> 00:45:24: of points in time on the, on the right hand

00:45:24 --> 00:45:27: side, but really thinking about these, these points in time

00:45:28 --> 00:45:31: that effectively money is, is changing hands, right?

00:45:31 --> 00:45:35: Or that there's a, there's a financial decision happening within

00:45:35 --> 00:45:35: the asset.

00:45:36 --> 00:45:39: So the solution that we're we're hopeful to provide is

00:45:39 --> 00:45:44: a shared global language for that constructive engagement and then

00:45:44 --> 00:45:47: a framework to look at the opportunities and also the

00:45:47 --> 00:45:50: risks and to be able to mitigate the risks and

00:45:51 --> 00:45:54: then create and really take advantage of the opportunities.

00:45:54 --> 00:45:59: And again, benchmark where you are against, against the targets

00:45:59 --> 00:46:03: and see where you can make improvements over time.

00:46:06 --> 00:46:08: So I won't stay sort of too long, but only

00:46:08 --> 00:46:11: so you can kind of digest the, the names at the bottom.

00:46:11 --> 00:46:12: These are the, this is a snapshot of people who participated in the early launch of the pilot, which I believe closed December.

00:46:12 --> 00:46:15: So two months ago we had several investors provide sort of the the stage and say, you know, these are the issues that are material.

00:46:15 --> 00:46:19: And you know, Brittany, you highlighted reducing, you know, water

00:46:19 --> 00:46:21: consumption and sort of thinking about it as a core metric and identifying how are we aiming to how are we sort of evaluating the, the sensitivity or the resilience around the, the resource of water?

00:46:21 --> 00:46:25: And also how are we thinking about how we're sourcing it in a, in a sustainable and hopefully reusable way?

00:46:26 --> 00:46:29: And then how are we engaging with the communities so that that there's not only an understanding of that you're doing the right thing, but that that that is perceived to be true because you can be doing all the

00:46:30 --> 00:46:32: right things.

00:46:32 --> 00:46:37: But if the, if the community thinks that something else is going on and, and you're telling them, oh, just trust me, I'm doing the right thing, that's not going to lead to a very constructive or useful conversation.

00:46:37 --> 00:46:41: If you haven't sort of created that underlying trust and you don't have quite frankly, the, the evidence to back it up.

00:46:41 --> 00:46:44: So providing it as a core, a core factor.

00:46:45 --> 00:46:49: And then we solicited input from managers and developers to sort of say, can you provide this information?

00:46:49 --> 00:46:52: Is this accessible to you?

00:46:52 --> 00:46:55: Like, are we asking the right questions?

00:46:55 --> 00:46:59: Are we asking this in the right way?

00:46:59 --> 00:47:03: And then we're really grateful for, you know, some of the consultants in the list who are able to see kind of a broader scope.

00:47:03 --> 00:47:07: And so they work with many different data center developers

00:47:07 --> 00:47:11: and operators and can sort of be the forest for the trees and and in some ways validate a lot

00:47:11 --> 00:47:15: of the questions that we're asking.

00:47:15 --> 00:47:16: So mentioned before four set of materials, water is one

00:48:18 --> 00:48:19: of the material issues.

00:48:19 --> 00:48:23: And I'm just highlighting the two bullets where they show up within the standard in in summary.

00:48:23 --> 00:48:26:

00:48:26 --> 00:48:30: But again, water as one of of the core issues

00:48:30 --> 00:48:34: and thinking about it from both a design standpoint.

00:48:35 --> 00:48:37: So again, and, and Laura, you talked about this also

00:48:37 --> 00:48:40: sort of thinking about it across your pillars like we

00:48:40 --> 00:48:43: have, we develop a strategy and, and thinking about the

00:48:43 --> 00:48:47: ways that we're going back to that strategy and evaluating

00:48:47 --> 00:48:48: ourselves sort of along the way.

00:48:49 --> 00:48:53: So in the design and then also in, in operation

00:48:53 --> 00:48:54: as well.

00:48:54 --> 00:48:57: And you can see, and I actually, I have to

00:48:57 --> 00:49:00: admit, I modified my slides while you guys were talking

00:49:00 --> 00:49:03: because I had only sort of highlighted where there was

00:49:03 --> 00:49:06: where was explicitly water was mentioned, but wanted to

00:49:06 --> 00:49:07: highlight

00:49:07 --> 00:49:08: that it does show up.

00:49:08 --> 00:49:11: And I this is probably not even doing it justice

00:49:11 --> 00:49:14: there, but really noting where these concepts come up and

00:49:14 --> 00:49:18: where the conversation that happens around water as well as

00:49:18 --> 00:49:19: other resources.

00:49:19 --> 00:49:23: Again, it's, you know, we're here to, to speak about

00:49:23 --> 00:49:24: that, about this issue.

00:49:24 --> 00:49:29: But again, it, it extends beyond and it's also worth

00:49:29 --> 00:49:35: thinking about the, the sensitivities and the resilience kind of

00:49:35 --> 00:49:38: evaluation differs in different spaces.

00:49:39 --> 00:49:42: I was telling a story previously about a, a data

00:49:42 --> 00:49:47: center design sort of evaluation in Louisiana and several

00:49:47 --> 00:49:51: stakeholders

00:49:51 --> 00:49:54: said, you know, we're worried about water, but it's actually

00:49:54 --> 00:49:56: not our top issue because we feel like we have

00:49:56 --> 00:49:59: access to clean water, right?

00:49:59 --> 00:50:02: I'm not here to, to say whether that's the right

00:50:02 --> 00:50:02: or the, the wrong perception, but it just depends on

00:50:03 --> 00:50:06: where you are.

00:50:06 --> 00:50:10: And then again, to think about, I'm actually at a

00:50:10 --> 00:50:13: conference today and somebody mentioned that as the world

00:50:13 --> 00:50:15: heats

00:50:16 --> 00:50:18: up, data centers are actually one of the most vulnerable

00:50:18 --> 00:50:22: asset classes to heat stress.

00:50:22 --> 00:50:25: And we talked about sort of that trade off between

00:50:25 --> 00:50:28: energy efficiency and, you know, trying to cool off the

00:50:22 --> 00:50:25: data center and sort of how that may have implications on water function.

00:50:25 --> 00:50:26: So the conversation is not stagnant and it's also depends

00:50:26 --> 00:50:30: on locations, geographies and quite frankly who the stakeholders are

00:50:30 --> 00:50:36: and what information they have.

00:50:36 --> 00:50:38: And I got back to that, that trust issue.

00:50:38 --> 00:50:40: Do they trust what you're saying or do you need

00:50:40 --> 00:50:44: to, you know, provide additional evidence or or sort of

00:50:44 --> 00:50:48: lead with more support to begin with so that you

00:50:48 --> 00:50:52: can sort of build that trust?

00:50:52 --> 00:50:54: So hopefully I haven't put you to sleep just yet

00:50:56 --> 00:50:58: and that you are you are hooked and interested in

00:50:58 --> 00:51:01: in sort of understanding where we're going to go from

00:51:01 --> 00:51:04: here.

00:51:04 --> 00:51:07: This is just a quick snapshot of, you know, I

00:51:07 --> 00:51:11: mentioned before we, we piloted this, we're actually going to

00:51:11 --> 00:51:15: launch, launch the, the pilot standard to the, the broader

00:51:15 --> 00:51:18: public in the, in the next couple of months.

00:51:19 --> 00:51:21: And then we'll sort of go back and be able

00:51:21 --> 00:51:23: to benchmark that, that broader public.

00:51:23 --> 00:51:27: And then eventually the, the, the OR excuse me, the

00:51:27 --> 00:51:31: standard will graduate and again evolve on a, on a

00:51:31 --> 00:51:32: regular cycle.

00:51:32 --> 00:51:36: We are also, we produced a white paper six months

00:51:36 --> 00:51:39: ago that sort of talked about where we, how we

00:51:39 --> 00:51:40: got here.

00:51:40 --> 00:51:44: And there will be another white paper published I believe

00:51:44 --> 00:51:44: in March.

00:51:45 --> 00:51:47: So in, in about a month that sort of talks

00:51:47 --> 00:51:51: about these, these elements and how again, the, the pilot

00:51:51 --> 00:51:54: continues for the standard continues to evolve.

00:51:55 --> 00:51:58: And with that, I say thank you and hopefully I

00:51:58 --> 00:52:00: have been under, I think I'd hit 15 minutes.

00:52:00 --> 00:52:02: So Marianne's smiling.

00:52:02 --> 00:52:03: She's not mad at me.

00:52:03 --> 00:52:04: I'm, I've done, I've done well.

00:52:05 --> 00:52:08: And I will, I'm open to any and all questions.

00:52:08 --> 00:52:10: Thank you guys so much for your time.

00:52:10 --> 00:52:10: I really appreciate it.

00:52:11 --> 00:52:12: Thank you so much, Sarah.

00:52:12 --> 00:52:15: So I think you can stop sharing your screen and

00:52:15 --> 00:52:16: then we'll see everybody.

00:52:17 --> 00:52:20: And I'd love to just kick off the group discussion

00:52:20 --> 00:52:23: here because we had two different speakers talk about standards.

00:52:23 --> 00:52:26: I mean, they're all kind of talking about standards in

00:52:26 --> 00:52:26: some ways.

00:52:27 --> 00:52:30: But I'd love to just maybe kick off the discussion

00:52:30 --> 00:52:33: talking about these some things that I noticed that the

00:52:33 --> 00:52:37: Alliance for Water Stewardship is really just about water, and

00:52:37 --> 00:52:39: it's not specific to data centers.

00:52:39 --> 00:52:43: It's really a broad certification process for anyone who wants

00:52:43 --> 00:52:45: to use it, but it's available right now.

00:52:45 --> 00:52:49: And then the GRASP and I Mason standards are currently

00:52:49 --> 00:52:53: in development, but they include many material factors, not just

00:52:53 --> 00:52:56: water, but water is like a core component.

00:52:57 --> 00:53:00: And that will be coming within 2026.

00:53:00 --> 00:53:01: Is that right, Sarah?

00:53:05 --> 00:53:05: Oh, we can't hear you.

00:53:09 --> 00:53:10: I was double muted.

00:53:11 --> 00:53:13: I'm on my phone, so it's double muted just for

00:53:13 --> 00:53:13: extra precautions.

00:53:14 --> 00:53:16: Yes, I want to say June 1st but don't although

00:53:16 --> 00:53:19: we are recorded, but you so you probably can hold

00:53:19 --> 00:53:22: me to that, but that's the that's the target.

00:53:23 --> 00:53:24: Great.

00:53:25 --> 00:53:27: So and then I'd also just love to open up

00:53:27 --> 00:53:30: the discussion by talking about with all of these standards,

00:53:31 --> 00:53:33: what is the interplay between water and energy?

00:53:33 --> 00:53:38: Are you seeing these trade-offs work out?

00:53:38 --> 00:53:38: How?

00:53:38 --> 00:53:41: How does that how does it all work out with

00:53:41 --> 00:53:43: the standards and anyone is welcome to answer.

00:53:48 --> 00:53:50: So I don't have a long response other than no,

00:53:50 --> 00:53:53: no, Laura, you'll have something much more profound than me

00:53:53 --> 00:53:53: to say.

00:53:54 --> 00:53:56: But again, it, it's just, it's a balance, right?

00:53:56 --> 00:53:58: And it depends on geography.

00:53:58 --> 00:54:00: It depends on sort of the, the specifics.

00:54:00 --> 00:54:03: So I'm not here to say sort of how to

00:54:03 --> 00:54:08: do the balance, but again, providing that transparency to let

00:54:08 --> 00:54:12: the stakeholders make that evaluation on their own.

00:54:12 --> 00:54:16: So that's, that's all I have to, yeah.

00:54:16 --> 00:54:20: And, and I would say sort of from practical experience

00:54:20 --> 00:54:23: and having those conversations, you know, the right answer is

00:54:23 --> 00:54:26: it depends on what context you're in.

00:54:26 --> 00:54:28: So it depends on if you're in a water stressed

00:54:28 --> 00:54:31: area, what that driver of water stress is and the

00:54:31 --> 00:54:34: scale of the data center and all of that.

00:54:35 --> 00:54:37: But when I talk to our data center team, the

00:54:37 --> 00:54:41: concerns they have and we only have eight data centers.

00:54:41 --> 00:54:44: So I can only imagine some of our peers and

00:54:44 --> 00:54:47: other companies up there who have hundreds of them or

00:54:47 --> 00:54:51: over 100 is that there's also a need for consistency

00:54:51 --> 00:54:54: and for, you know, ordering equipment that can be used

00:54:54 --> 00:54:59: in multiple data centers, not building something that's bespoke for

00:54:59 --> 00:55:00: every single place you are.

00:55:00 --> 00:55:02: So there's that tradeoff.

00:55:02 --> 00:55:05: And I think that's getting more real as the data

00:55:05 --> 00:55:09: center industry grows and as companies portfolios grow.

00:55:09 --> 00:55:13: And then but but I'll say, you know, the principle

00:55:13 --> 00:55:16: that we come back to is once when we're looking

00:55:16 --> 00:55:19: at that energy water trade off, if we are in

00:55:19 --> 00:55:23: a place that's water stressed and we're looking to go,

00:55:23 --> 00:55:27: you know air cooled for example, instead we have been

00:55:27 --> 00:55:31: 100% renewable since 2018 and continued to maintain that.

00:55:31 --> 00:55:33: And now that's part of our broader Apple 2030 carbon

00:55:34 --> 00:55:34: neutral goals.

00:55:35 --> 00:55:38: And so even if there is an impact on, you

00:55:38 --> 00:55:41: know, using more energy at the facility, we are supplying

00:55:41 --> 00:55:45: that energy with 100% renewable energy, which does not use

00:55:45 --> 00:55:48: water if we're doing wind or solar, which is the

00:55:48 --> 00:55:49: vast majority of what we do.

00:55:49 --> 00:55:52: So there are ways to to kind of address that

00:55:52 --> 00:55:54: trade off if you do have to make it and

00:55:54 --> 00:55:57: mitigate further impacts both for climate impacts as well as

00:55:58 --> 00:56:00: you know specifically water impacts.

00:56:02 --> 00:56:04: It's great to hear Bretton and Howard.

00:56:04 --> 00:56:06: I don't know if you want to add anything, go

00:56:06 --> 00:56:06: ahead.

00:56:06 --> 00:56:10: Yeah, I agree with everything I'm hearing here and it's

00:56:10 --> 00:56:11: a great conversation.

00:56:11 --> 00:56:12: Thank you all.

00:56:12 --> 00:56:15: And yes, and I, I just had, it's not just

00:56:15 --> 00:56:18: about energy and water, it's also about money and that's,

00:56:18 --> 00:56:22: and how do you balance those three and and whose

00:56:22 --> 00:56:25: money are we talking about if you do use more

00:56:25 --> 00:56:27: energy in order to use less water?

00:56:27 --> 00:56:30: It's a, it's a whole complicated balance here.

00:56:30 --> 00:56:34: That is as I think it's everyone's concerned, it's really

00:56:34 --> 00:56:37: a site by site issue on a global issue and

00:56:37 --> 00:56:38: global basis.

00:56:38 --> 00:56:41: I think we're all OK with water and AI, but

00:56:41 --> 00:56:44: in terms of a specific location, there are a lot

00:56:44 --> 00:56:46: of different variables at stake.

00:56:46 --> 00:56:46: Well.

00:56:50 --> 00:56:51: Said thank you.

00:56:52 --> 00:56:55: So we'd love for anyone in the audience to submit

00:56:55 --> 00:56:56: their questions.

00:56:56 --> 00:56:58: Because there's so many people, it might be easiest for

00:56:58 --> 00:57:00: everyone to just put their questions in the chat box.

00:57:01 --> 00:57:03: You know, the questions that I've been seeing come in

00:57:03 --> 00:57:04: so far have been responded to.

00:57:04 --> 00:57:07: But if you would like to open up any of

00:57:07 --> 00:57:10: those to group discussion, feel free to raise your hand

00:57:10 --> 00:57:13: and you can unmute and ask your question to the

00:57:13 --> 00:57:14: full group, speaker group.

00:57:16 --> 00:57:17: We'd love to hear from you.

00:57:23 --> 00:57:27: And I included the white paper, well, the data assessment

00:57:27 --> 00:57:30: link, which includes the white paper, by the way.

00:57:31 --> 00:57:32: Thank you so much, Sarah.

00:57:34 --> 00:57:37: There is a, there was a question, I think it

00:57:37 --> 00:57:42: was mostly answered, but it was about Prince George's

00:57:42 --> 00:57:45: County

00:57:45 --> 00:57:48: and which I know is a very hotspot for for

00:57:49 --> 00:57:53: data centers and what's going to happen there.

00:57:53 --> 00:57:56: And you know, I'm talking about having doing this on

00:57:56 --> 00:57:57: a brownfield site and just just how you place the

00:57:57 --> 00:58:00: question.

00:58:00 --> 00:58:03: I think it's really important and I think the most

00:58:03 --> 00:58:06: important thing that that all parties need to do is,

00:58:06 --> 00:58:09: is ask the question to themselves is how does this

00:58:09 --> 00:58:10: project improve the lives, improve the lives of the people

who live next door to it.

00:58:10 --> 00:58:13: And I think that that'll take you a long way
00:58:13 --> 00:58:16: into helping you be able to solve or at least
00:58:16 --> 00:58:19: know how to approach community on these very many
issues.
00:58:20 --> 00:58:25: Noise pollution, air pollution, water pollution, heat pollution,
everything else.
00:58:25 --> 00:58:26: It's it's vast.
00:58:26 --> 00:58:29: I hate that, you know, I am the water center,
00:58:29 --> 00:58:30: so I have, I'm focusing on water.
00:58:30 --> 00:58:32: But I recognize that when you speak to community, it's
00:58:33 --> 00:58:34: about all these issues together.
00:58:37 --> 00:58:40: And I just want to highlight that an example of
00:58:40 --> 00:58:41: making communities better.
00:58:41 --> 00:58:45: Apple's doing a great job of developing water reuse, water
00:58:45 --> 00:58:49: treatment and reuse centers, not just for themselves, but for
00:58:49 --> 00:58:52: communities, which I think is really exciting.
00:58:53 --> 00:58:55: And Joshua has a question along those lines.
00:58:55 --> 00:58:57: Joshua, do you want to unmute and ask?
00:59:04 --> 00:59:04: Yes.
00:59:05 --> 00:59:06: Can you hear me go?
00:59:07 --> 00:59:07: Ahead.
00:59:07 --> 00:59:08: Yes.
00:59:08 --> 00:59:11: So I work in land development and I know there's
00:59:11 --> 00:59:15: a lot of trade-offs when building projects and land, right.
00:59:15 --> 00:59:20: So I typically see the city's agencies, there's like these
00:59:20 --> 00:59:25: opportunities where you can help the city or the water
00:59:25 --> 00:59:30: agency to build some infrastructure or IT or add dollars
to that a fund to help the project be viable.
00:59:30 --> 00:59:34: And so you're helping the community while also, you know,
00:59:37 --> 00:59:38: building your project.
00:59:39 --> 00:59:42: What are the, I mean, I assume there's some good
00:59:42 --> 00:59:46: opportunities out there to like help these cities and agencies
00:59:46 --> 00:59:50: where they don't, they're underfunded, right, To do some of
00:59:50 --> 00:59:53: these projects that they want to do aside from the
00:59:53 --> 00:59:54: data center, right?
00:59:54 --> 00:59:56: Just that they, they need to do, but they don't
00:59:56 --> 00:59:57: have the funds to do it.
00:59:57 --> 01:00:01: Is there opportunities that we're looking at like that to
01:00:01 --> 01:00:04: help these cities and agencies do these projects so that
01:00:04 --> 01:00:08: the data center is actually improving the agencies and the
01:00:08 --> 01:00:09: cities that they're in?
01:00:13 --> 01:00:17: I'll, I'll start with an answer there and just to

01:00:17 --> 01:00:21: point out that there sometimes there's a conflict between the cities and the, and the communities immediately surrounding the area.

01:00:25 --> 01:00:29: And those need to be really recognized by everyone who's involved with these projects that yes, they might be a

01:00:29 --> 01:00:32: great tax revenue coming to a city, but you really

01:00:32 --> 01:00:35: have to also focus on the people in the immediate

01:00:35 --> 01:00:38: community that are, that are surrounding there.

01:00:38 --> 01:00:41: And, and then there are great things that can be

01:00:43 --> 01:00:45: done.

01:00:45 --> 01:00:48: I mean, you know, we, we have, we talked about

01:00:48 --> 01:00:51: the, you know, the problems of heat, but there's also

01:00:51 --> 01:00:54: the opportunity of heat and capturing the waste heat and

01:00:54 --> 01:00:58: using it in a community for, for community heating and

01:00:58 --> 01:00:58: distribution.

01:00:59 --> 01:01:00: So that's one way.

01:01:00 --> 01:01:03: Another way is that, that I, as a water utility

01:01:03 --> 01:01:06: person love is we have a lot of water everywhere

01:01:06 --> 01:01:10: and it's coming out of our wastewater plants and going

01:01:10 --> 01:01:14: into our rivers and streams and the recycling of that

01:01:14 --> 01:01:18: water, that treating that water to quality that is suitable

01:01:18 --> 01:01:21: for cooling is a, is a great opportunity for the

01:01:21 --> 01:01:25: environment and for the municipality and for the utility and

01:01:26 --> 01:01:27: for the developer.

01:01:28 --> 01:01:29: That's 2 examples.

01:01:31 --> 01:01:33: Those are sorry.

01:01:33 --> 01:01:35: I was going to add another perspective.

01:01:35 --> 01:01:38: I mean, I would say to the cities are one

01:01:38 --> 01:01:41: stakeholder of multiple stakeholders in a area.

01:01:41 --> 01:01:45: You've got the city, you know, being government, municipal government,

01:01:45 --> 01:01:48: obviously you have the the community and people who live

01:01:48 --> 01:01:48: there.

01:01:48 --> 01:01:51: You also have the environment and you know, not a

01:01:51 --> 01:01:55: lot of people speak for the environment, but usually nature

01:01:55 --> 01:01:58: is who gets short shrift in water planning and, and

01:01:58 --> 01:02:00: extracted water allocation.

01:02:00 --> 01:02:02: So that's another thing to consider.

01:02:02 --> 01:02:06: And you know, an example that I can share was

01:02:06 --> 01:02:09: for our Prine field data center many years ago.

01:02:10 --> 01:02:12: You know, we were when we thought water scarcity was

01:02:12 --> 01:02:14: overall water scarcity was the big problem.

01:02:15 --> 01:02:19: We were exploring doing a wastewater treatment and reuse facility with the city.

01:02:19 --> 01:02:20: And you know, the problem is we only use water there for two or three months out of a year.

01:02:23 --> 01:02:25: So what do you do with this facility that is,

01:02:25 --> 01:02:28: you know, needs to produce this, this waste treated wastewater

01:02:28 --> 01:02:32: the rest of the time and the economics just didn't really work out given that that seasonal impact.

01:02:32 --> 01:02:36: And so we started exploring other options and, and talking to other stakeholders and, you know, we eventually realized that

01:02:36 --> 01:02:39: really we had to address that seasonal problem.

01:02:39 --> 01:02:42: And that doing an I saw somebody asking the questions

01:02:42 --> 01:02:46: about enhanced aquifer recharge or managed aquifer recharge, we ended

01:02:46 --> 01:02:49: up identifying that this is a place that we could do aquifer recharge and storage.

01:02:49 --> 01:02:53: And so, you know, it may end up making a

01:02:53 --> 01:02:57: lot more sense.

01:02:57 --> 01:03:01: The city could actually store, you know, small amounts of water throughout the year, but put it in to the

01:03:01 --> 01:03:03: aquifer and then withdraw that up where the data centers are.

01:03:03 --> 01:03:05: And we are not the only data center in that

01:03:05 --> 01:03:06: area and kind of isolate that peak need from the rest of the community.

01:03:06 --> 01:03:10: So it helped shore up the wells in the basin

01:03:10 --> 01:03:13: area where the rest of the community and the city withdraw were, and that met that that seasonal need.

01:03:13 --> 01:03:16: And the overall water benefit from doing that was I

01:03:16 --> 01:03:17: think four to five times what it would have been

01:03:17 --> 01:03:20: if we had just done that wastewater treatment facility that

01:03:20 --> 01:03:23: really would have only served us.

01:03:23 --> 01:03:24: So it's worth having those broad stakeholder conversations to get

01:03:24 --> 01:03:27: at solutions that aren't immediately obvious.

01:03:27 --> 01:03:31: Great.

01:03:31 --> 01:03:35: So we have a lot of questions coming in.

01:03:35 --> 01:03:38: Josh did that.

01:03:38 --> 01:03:40: I saw you unmuted.

01:03:41 --> 01:03:44: Did you want to?

01:04:02 --> 01:04:03: Oh no, I was just saying going to say thank you.

01:04:03 --> 01:04:03: Now that helps because I know there's solutions out there

01:04:04 --> 01:04:06: just I was just trying to see what the solutions

01:04:06 --> 01:04:08: you guys have been using.

01:04:08 --> 01:04:09: Great.

01:04:11 --> 01:04:12: So we have a lot of questions coming in, so

01:04:12 --> 01:04:14: I'm going to try and do them in chronological order.

01:04:14 --> 01:04:17: Ariel's actually was really on point to this current

01:04:17 --> 01:04:21: conversation.

01:04:21 --> 01:04:22: So I'm going to have her go first and then

01:04:22 --> 01:04:26: Harold, Jim, TJ, Mike, Annabelle and Marielle.

01:04:26 --> 01:04:30: So in that order.

01:04:32 --> 01:04:33: And then I can call on you again if we

01:04:33 --> 01:04:34: forget the order.

01:04:36 --> 01:04:37: And then, Christine?

01:04:38 --> 01:04:39: All right, so should I start?

01:04:40 --> 01:04:40: Go ahead.

01:04:41 --> 01:04:42: OK, thanks so much.

01:04:43 --> 01:04:46: Yeah, On the topic of recycled water, what I've seen,

01:04:46 --> 01:04:50: so I'm in California and I just recently was aware

01:04:50 --> 01:04:53: of a project where recycled water was available to the

01:04:53 --> 01:04:54: project site.

01:04:54 --> 01:04:55: That was not the issue.

01:04:56 --> 01:04:58: But when they did the due diligence on it, they

01:04:58 --> 01:05:02: discovered that it would actually require treatment above and beyond

01:05:02 --> 01:05:04: how it was delivered.

01:05:04 --> 01:05:07: And so there were feasibility and cost constraints around using

01:05:07 --> 01:05:10: the recycled water for the evaporative cooling at that data center.

01:05:10 --> 01:05:11: And so the result was they're not using recycled water.

01:05:11 --> 01:05:14: And I, I think that's an area of like increased

01:05:15 --> 01:05:19: interest is how can we better utilize recycled water, water.

01:05:19 --> 01:05:23: What are the existing technological constraints?

01:05:24 --> 01:05:26: What are the cost constraints?

01:05:26 --> 01:05:27: I don't have a technical background.

01:05:27 --> 01:05:29: I'm a lawyer.

01:05:29 --> 01:05:31: So I just see it when it comes up in

01:05:31 --> 01:05:33: the entitlement and environmental review process.

01:05:33 --> 01:05:36: But there's a lot of really great technical people on

01:05:36 --> 01:05:36: this call.

01:05:36 --> 01:05:39: So I'd love to just hear from the panelists and
01:05:40 --> 01:05:43: anyone else like what are, what are you seeing as
01:05:43 --> 01:05:44: the constraints?
01:05:44 --> 01:05:47: What might be coming down the pipeline in terms of
01:05:47 --> 01:05:51: additional technologies or things that might make this a little
01:05:51 --> 01:05:52: bit easier?
01:05:55 --> 01:05:57: I, I can, I can start there and just just
01:05:57 --> 01:05:59: say really it's not a, it's not a technology issue
01:05:59 --> 01:06:00: at this point.
01:06:01 --> 01:06:01: As a matter of fact.
01:06:01 --> 01:06:05: And you're, if you're in California and this is something
01:06:05 --> 01:06:08: happened in the past, it's probably recycled water for
agricultural
01:06:08 --> 01:06:09: use, probably.
01:06:10 --> 01:06:13: So it's, you know, yes, it would have to be
01:06:13 --> 01:06:14: treated more than that.
01:06:14 --> 01:06:18: And the, the amount of treatment that's needed is, is
01:06:18 --> 01:06:20: very much on a, on a full band.
01:06:20 --> 01:06:24: And what we're seeing now all over the world is,
01:06:24 --> 01:06:26: is going to toilet to tap.
01:06:26 --> 01:06:28: So you're making this water, you can make this water
01:06:29 --> 01:06:32: significant, significantly improved to the quality that you can,
you
01:06:32 --> 01:06:34: can put it into the tap water and and drink
01:06:35 --> 01:06:38: it directly from the wastewater plant with additional treatment.
01:06:39 --> 01:06:41: So it is possible, but so it's not really the
01:06:41 --> 01:06:44: technology, but you are absolutely right, it is really the
01:06:44 --> 01:06:47: cost and that's the balance that we're all going to
01:06:47 --> 01:06:51: have with again mentioned before energy and water, how
much
01:06:51 --> 01:06:53: you use more energy, it's very expensive.
01:06:54 --> 01:06:57: Use better higher quality water, it's very expensive.
01:06:57 --> 01:07:02: But that's what we're dealing with is something that that
01:07:02 --> 01:07:03: is of high cost.
01:07:03 --> 01:07:06: And the question to all of us is going to
01:07:06 --> 01:07:08: be what's the value of AI, what's the value of
01:07:08 --> 01:07:10: water, what's the value of energy?
01:07:10 --> 01:07:12: And how do you balance all that?
01:07:12 --> 01:07:14: And it's going to be very site specific.
01:07:14 --> 01:07:17: And yeah, I would find it hard to believe that
01:07:17 --> 01:07:20: a data center on its own would want to treat
01:07:21 --> 01:07:25: municipal wastewater to the degree that's needed for for
cooling

01:07:25 --> 01:07:27: in the data center.

01:07:27 --> 01:07:31: But there's more and more recycle total recycling facilities being

01:07:31 --> 01:07:33: built all over the world right now.

01:07:34 --> 01:07:36: The technology is there, but it's expensive.

01:07:38 --> 01:07:41: And you know, I'd add that there are new going

01:07:41 --> 01:07:42: to the cost piece.

01:07:42 --> 01:07:45: I mean one obviously we we all know if we're

01:07:45 --> 01:07:48: dealing with water, water has been a highly or heavily

01:07:48 --> 01:07:50: underpriced subsidized for a long time.

01:07:50 --> 01:07:53: So it's value, it's cost is not reflect it's value

01:07:53 --> 01:07:55: that is changing in a lot of places.

01:07:55 --> 01:07:57: And and you know, I know a lot of places

01:07:57 --> 01:08:01: especially in California we're seeing double digit growth in rates.

01:08:02 --> 01:08:06: So it is catching up, but also there are new

01:08:06 --> 01:08:11: finance approaches to to making systems like this work.

01:08:11 --> 01:08:14: So the additional polishing and treatment that you might have

01:08:14 --> 01:08:17: to do on site at a data center to get

01:08:17 --> 01:08:20: recycled water from a municipality up to the level where

01:08:21 --> 01:08:23: you can use it in cooling towers or in in

01:08:23 --> 01:08:25: a cooling system, you can do that.

01:08:25 --> 01:08:27: You can either own and operate that.

01:08:27 --> 01:08:28: That's expensive.

01:08:28 --> 01:08:31: There's risk involved in that or you can look to

01:08:31 --> 01:08:35: some service providers out there who are doing water processing

01:08:35 --> 01:08:38: agreements and so de risk it a little bit and

01:08:38 --> 01:08:41: and kind of spread that out over time as well

01:08:42 --> 01:08:45: given the data centers or facilities with you know, 2530

01:08:45 --> 01:08:46: year lifespans.

01:08:47 --> 01:08:49: So it's it's changing definitely.

01:08:51 --> 01:08:53: So Next up is Harold.

01:08:53 --> 01:08:55: I just want to quickly note we have around 9

01:08:55 --> 01:08:57: minutes and eight questions left.

01:08:57 --> 01:09:00: So we're going to be speedy with these Q and

01:09:00 --> 01:09:00: As.

01:09:00 --> 01:09:01: But Harold, go ahead.

01:09:02 --> 01:09:04: Yeah, I was just, I miss in the swimming pool

01:09:04 --> 01:09:07: industry and I have actually created a reuse system for

01:09:07 --> 01:09:10: swimming pool water when we're cleaning the filtration systems and

01:09:10 --> 01:09:12: we're using different types of media.

01:09:13 --> 01:09:16: And I'm not sure, I'm not familiar with cooling towers yet to where I understand if they're using side filters that we could capture the water and and reuse that water.

01:09:16 --> 01:09:20:

01:09:20 --> 01:09:23:

01:09:23 --> 01:09:23:

01:09:24 --> 01:09:27: But that's that's just one of the things that that's

01:09:27 --> 01:09:29: why I came into this call to sort of get

01:09:29 --> 01:09:31: educated to see what's what's being used out there.

01:09:32 --> 01:09:35: And I'm actually building a pool for a guy that

01:09:35 --> 01:09:38: actually maintains cooling towers over in Fremont, over in the

01:09:38 --> 01:09:39: area here in California.

01:09:39 --> 01:09:43: So just again, that's why I'm here.

01:09:43 --> 01:09:45: I'm just trying to find out, you know, what's being

01:09:45 --> 01:09:46: used and and how.

01:09:50 --> 01:09:51: Yeah, I can speak to that there.

01:09:51 --> 01:09:56: There is filtration that's used in in cooling towers.

01:09:56 --> 01:09:59: I mean you'll often hear about cycles of concentration, that's

01:09:59 --> 01:10:02: how much use you're getting out of the water before

01:10:02 --> 01:10:04: you have to discharge it.

01:10:04 --> 01:10:07: And then you know, there are other types of, of

01:10:07 --> 01:10:11: water based cooling systems like adiabatic systems, direct evap where

01:10:11 --> 01:10:15: you will have a filter media and you're essentially extracting

01:10:15 --> 01:10:18: any mineral content or anything like that on that filter

01:10:18 --> 01:10:22: media before it goes into the data Center for cooling.

01:10:22 --> 01:10:25: So munters media is, is one that's out there.

01:10:25 --> 01:10:28: I know there are many others, but that is something

01:10:28 --> 01:10:29: that that people use.

01:10:33 --> 01:10:33: Great.

01:10:34 --> 01:10:36: Should we go on to Jim's question?

01:10:43 --> 01:10:43: All right, if I might.

01:10:44 --> 01:10:44: Oh, Jim, go ahead.

01:10:46 --> 01:10:46: Hi there.

01:10:46 --> 01:10:49: Yeah, again, I think you sort of addressed it, but

01:10:49 --> 01:10:52: I'm really curious about technologies like enhanced stock for recharge

01:10:52 --> 01:10:55: and again, how this might be a system that can

01:10:55 --> 01:10:58: sort of offset some of these impacts with potential credits

01:10:58 --> 01:11:00: if anything like that's come up before.

01:11:00 --> 01:11:02: But yeah, Laura, I think you kind of addressed that

01:11:02 --> 01:11:02: well.

01:11:02 --> 01:11:04: So I took notes.

01:11:05 --> 01:11:05: Great.

01:11:05 --> 01:11:07: Yeah, it is definitely being used.

01:11:08 --> 01:11:12: Volumetric water benefits are the currency, if you will, of a lot of corporate water replenishment projects.

01:11:12 --> 01:11:15: So the there's a version two of the methodology that's out.

01:11:20 --> 01:11:20: It came out from World Resources Institute and some other partners in gosh, a year ago, maybe not not too

01:11:29 --> 01:11:29: long ago.

01:11:33 --> 01:11:35: Excellent, TJ, go ahead.

01:11:36 --> 01:11:37: Hi.

01:11:37 --> 01:11:38: Can you guys hear me OK?

01:11:39 --> 01:11:40: Perfect.

01:11:40 --> 01:11:43: So I just sat in earlier this afternoon at like

01:11:43 --> 01:11:44: 1:30 Eastern Standard Time.

01:11:44 --> 01:11:46: I sat in on a panel from the Urban Land

01:11:47 --> 01:11:50: Institute, which was kind of discussing like resiliency in communities

01:11:51 --> 01:11:54: and that was mostly discussing resiliency from the perspective of,

01:11:54 --> 01:11:58: you know, extreme weather events and that kind of concern.

01:11:58 --> 01:12:00: But something that sprang up out of that was the

01:12:00 --> 01:12:02: discussion of local collectives.

01:12:02 --> 01:12:06: So coalitions like the Altadena Collective kind of coming together

01:12:06 --> 01:12:09: after those, you know, emergencies happen and kind of advocating

01:12:09 --> 01:12:10: for communities.

01:12:10 --> 01:12:12: And I wanted to ask the panelists if they had

01:12:12 --> 01:12:16: seen just in the development of data centers, not necessarily,

01:12:16 --> 01:12:19: you know, emergency weather concerns, but in the development of

01:12:19 --> 01:12:22: data centers, if they had seen any sort of action

01:12:22 --> 01:12:25: or activity from these local kind of coalitions or kind of groups.

01:12:25 --> 01:12:26: And if adding or incorporating further standards and guidance that

01:12:27 --> 01:12:31: kind of improve water usage and and water guidance, if

01:12:31 --> 01:12:34: that's a kind of affected, you know, socio economic acceptance

01:12:38 --> 01:12:41: of data centers in those local communities.

01:12:49 --> 01:12:52: Well, I, I think you, I think data centers is

01:12:52 --> 01:12:56: a great way to create these local collaboratives because people

01:12:56 --> 01:12:59: get angry whether they should or not with the idea

01:12:59 --> 01:13:01: of having these data centers.

01:13:01 --> 01:13:03: So, so that's doing a good thing in my mind

01:13:03 --> 01:13:06: is, you know, getting people to think and understand this.

01:13:06 --> 01:13:10: And how do you reach an agreement between someone who

01:13:10 --> 01:13:13: wants to build a data center and someone who wants

01:13:13 --> 01:13:16: to live next door to A to a forest or,

01:13:16 --> 01:13:17: or a farm?

01:13:18 --> 01:13:22: That's, that's a lot of negotiation And, and the, and

01:13:22 --> 01:13:26: the trust is there and the trust needs time to

01:13:26 --> 01:13:26: be built.

01:13:27 --> 01:13:29: I'm sorry, sorry.

01:13:30 --> 01:13:32: I just muted Nadia.

01:13:32 --> 01:13:34: I think she OK unmuted.

01:13:36 --> 01:13:37: It's all about, it's all about the trust.

01:13:37 --> 01:13:40: Yes, you have all these numbers and you have independent

01:13:40 --> 01:13:42: experts and you have people for and people against.

01:13:42 --> 01:13:45: And it's a question of, you know, in my mind,

01:13:45 --> 01:13:49: coming in early and often and starting with the conversation

01:13:49 --> 01:13:53: and hopefully reaching some kind of, some kind of
agreement,

01:13:53 --> 01:13:56: but you know, and, and finding out what the issues

01:13:56 --> 01:13:57: are going to be.

01:13:58 --> 01:14:00: Often times there are a lot of issues out there,

01:14:00 --> 01:14:03: a lot of reasons why people don't want a data

01:14:03 --> 01:14:06: center, such as they don't like a big black box

01:14:06 --> 01:14:09: with a fence around it that's hums and but they

01:14:09 --> 01:14:12: can't find any reason with their local ordinances to not

01:14:12 --> 01:14:13: do that.

01:14:13 --> 01:14:16: So they tack on and they focus on something like

01:14:16 --> 01:14:20: water, whether it's real or not and perceived or or

01:14:20 --> 01:14:21: not.

01:14:21 --> 01:14:24: It's, it's, you know, it's, it's a, it's a solution,

01:14:24 --> 01:14:27: you know, a solution to the community who's looking not

01:14:27 --> 01:14:30: to build it for reasons that they, they can't fight

01:14:30 --> 01:14:30: a.

01:14:31 --> 01:14:31: Lot of go.

01:14:33 --> 01:14:33: Go ahead, TJ.

01:14:34 --> 01:14:37: No, I actually, when I I'll send Mr.

01:14:37 --> 01:14:40: Neukroge, I, I'll actually send you an e-mail because I

01:14:40 --> 01:14:43: that touches on things like social capital that I've been

01:14:43 --> 01:14:44: doing my own research on.

01:14:44 --> 01:14:46: And I would really love to just discuss with you

01:14:46 --> 01:14:47: on that further because I definitely don't want to pull it from other questions.

01:14:47 --> 01:14:48: That's great, yeah.

01:14:51 --> 01:14:51: And, and people can put their questions in the chat box and hopefully they'll get responses as well if we run out of time.

01:14:57 --> 01:14:58: But I wanted to actually pair this question with Mike's

01:15:01 --> 01:15:05: question about the Colorado River negotiations because in the Western

01:15:05 --> 01:15:08: United States, TJI think this is really relevant to your

01:15:08 --> 01:15:09: question as well.

01:15:10 --> 01:15:11: We're seeing massive drought.

01:15:11 --> 01:15:15: And so these conversations are taking a different pitch than

01:15:15 --> 01:15:18: maybe other places in the US, even though groundwater is

01:15:18 --> 01:15:21: being overdrawn everywhere in the US and across the world.

01:15:21 --> 01:15:24: So you might be an issue everywhere, but it's most

01:15:24 --> 01:15:26: visible here in the Western United States.

01:15:26 --> 01:15:28: Mike, do you want to ask your question really quick?

01:15:30 --> 01:15:30: Sure.

01:15:30 --> 01:15:31: Thanks Marianne.

01:15:31 --> 01:15:32: Questions for Laura.

01:15:32 --> 01:15:36: Thanks Laura for joining the panel and and being here.

01:15:37 --> 01:15:41: Does Apple anticipate the outcome of the Colorado River Compact

01:15:41 --> 01:15:43: negotiations impacting any way the location?

01:15:44 --> 01:15:46: Planning for future data centers.

01:15:47 --> 01:15:48: Yeah, great question.

01:15:48 --> 01:15:51: I mean, we have a data center in Mesa, AZ,

01:15:51 --> 01:15:53: which you would have seen on my slide if it

01:15:54 --> 01:15:54: had worked.

01:15:54 --> 01:15:57: But so we're we're experiencing that today.

01:15:57 --> 01:16:02: And that particular data center was originally a manufacturing facility

01:16:02 --> 01:16:03: for another company.

01:16:03 --> 01:16:06: Then it was something for us for a little bit

01:16:06 --> 01:16:07: and then it became a data center.

01:16:07 --> 01:16:10: So it's kind of unique in our portfolio.

01:16:11 --> 01:16:12: It is water cooled.

01:16:12 --> 01:16:15: And so you know, we we very much kind of

01:16:15 --> 01:16:19: keep on top of what's happening with the Colorado River

01:16:19 --> 01:16:22: planning and post 2026, you know, now that we're in

01:16:22 --> 01:16:24: it, what happens there.

01:16:24 --> 01:16:27: I mean, I don't know that we anticipate citing more

01:16:27 --> 01:16:30: data centers in that area, but certainly, you know, we're
01:16:30 --> 01:16:32: we're keeping on top of it in terms of whether
01:16:32 --> 01:16:35: it's going to have any impact on existing operations.
01:16:35 --> 01:16:39: And we've done replenishment projects in the region.
01:16:39 --> 01:16:43: We did a very significant forest thinning project with SRP
01:16:43 --> 01:16:48: to improve, you know, water quality and help prevent against
01:16:48 --> 01:16:50: catastrophic fire damage.
01:16:51 --> 01:16:54: And you know, we just kind of try to to
01:16:54 --> 01:16:57: stay on top of what's happening there.
01:16:57 --> 01:17:02: So can't say for future planning, but it's definitely an
01:17:02 --> 01:17:02: issue.
01:17:04 --> 01:17:08: Pete, we've got Annabelle, Marielle, Christine and then Tyler.
01:17:08 --> 01:17:10: And we're going to be really quick because we're running
01:17:10 --> 01:17:10: out of time here.
01:17:11 --> 01:17:12: But sounds good.
01:17:13 --> 01:17:16: I'm Annabelle, I'm with EOR here in Minnesota.
01:17:16 --> 01:17:18: And so we do a lot of local planning and
01:17:18 --> 01:17:19: watershed management with our clients.
01:17:19 --> 01:17:22: And so we're on the client, the community side of
01:17:22 --> 01:17:25: things and they're trying to be very proactive with their
01:17:25 --> 01:17:29: comprehensive planning and identifying potential overlay
districts.
01:17:29 --> 01:17:33: And I'm just, it's been very challenging to try to
01:17:33 --> 01:17:37: like help on that front and hear how responsibly you
01:17:38 --> 01:17:41: all are like thinking about development.
01:17:41 --> 01:17:44: And like that's doesn't seem to be the experience our
01:17:44 --> 01:17:48: communities are having with the developers who are coming
in.
01:17:48 --> 01:17:50: And I think there's AI think it seems to be
01:17:50 --> 01:17:53: mainly more front end developers who are ready to like
01:17:53 --> 01:17:56: sell and so they don't have those long term interest
01:17:56 --> 01:17:56: in mind.
01:17:56 --> 01:17:58: And so I'm just any ideas you have on what
01:17:58 --> 01:18:02: like how to actually connect the community with the
developers
01:18:02 --> 01:18:04: who are ready to do this responsibly?
01:18:04 --> 01:18:08: Because there really is quite a desire for that.
01:18:08 --> 01:18:11: It's just this is hard.
01:18:12 --> 01:18:13: And thank you for doing what you do.
01:18:17 --> 01:18:19: Yeah, I mean, I, I'm not sure maybe this is
01:18:19 --> 01:18:21: a good one for Sarah actually to answer.
01:18:21 --> 01:18:24: I would say I'm not sure quite how to influence
01:18:24 --> 01:18:26: what those front end developers are doing.

01:18:26 --> 01:18:29: But I hope, you know, everything we do, we try
01:18:29 --> 01:18:31: to do because it's the right thing to do, but
01:18:31 --> 01:18:34: also because it's that's an example for how others can
01:18:34 --> 01:18:34: approach it.

01:18:34 --> 01:18:37: And you know, once you hear about our power is
01:18:37 --> 01:18:39: in the collective, right.

01:18:39 --> 01:18:42: So, you know, once you hear about how we're approaching
01:18:42 --> 01:18:45: things and, and maybe some of our peers, then communities
01:18:45 --> 01:18:48: can begin asking those companies for these same sorts of
01:18:48 --> 01:18:49: things.

01:18:49 --> 01:18:52: So, yeah, you know, that that leadership and advocacy piece
01:18:52 --> 01:18:55: of things that I was talking about, I didn't talk
01:18:55 --> 01:18:58: about it in my slide, but we published a paper
01:18:58 --> 01:19:02: with Alliance for Water Stewardship talking about how we're
doing
01:19:02 --> 01:19:03: this in data centers.

01:19:03 --> 01:19:07: And hopefully that, yeah, when the slides get shared, that
01:19:07 --> 01:19:09: link is in that slide, so you can see it.

01:19:10 --> 01:19:13: But hopefully that gets shared with communities and and with
01:19:13 --> 01:19:16: other developers and this begins to be something that's more
01:19:16 --> 01:19:17: widely adopted.

01:19:17 --> 01:19:20: That was our whole intent when we went to we
01:19:20 --> 01:19:24: were the first data center actually to get certified to
01:19:24 --> 01:19:25: the AWS standard.

01:19:25 --> 01:19:28: And then I think we're still the first data centers
01:19:28 --> 01:19:29: to be certified.

01:19:29 --> 01:19:32: So hoping that others pick it up too.

01:19:33 --> 01:19:34: Thank you, Sarah.

01:19:34 --> 01:19:34: I got.

01:19:34 --> 01:19:35: 100% thoughts on that?

01:19:35 --> 01:19:38: No, no, no, I mean you, you nailed it on
01:19:38 --> 01:19:39: the head.

01:19:39 --> 01:19:42: It's it's about that peer sort of pressure and making
01:19:42 --> 01:19:46: it really obvious that, you know, and again, it's, it's
01:19:46 --> 01:19:49: it's facilitating A constructive conversation.

01:19:49 --> 01:19:53: If the the developer says, Oh, we can't do that
01:19:53 --> 01:19:56: because XY and Z you're equipped with wait, so and
01:19:56 --> 01:19:59: so did it like this is that's actually not a
01:19:59 --> 01:20:03: valid, you know, reason because you can point to Apple
01:20:03 --> 01:20:06: or others, you know, and that have done these things.

01:20:07 --> 01:20:11: And so really making that that information publicly available.

01:20:12 --> 01:20:16: And you know, Greg doesn't doesn't make a score available

01:20:16 --> 01:20:19: or the the actual report, but you can see Oh
01:20:19 --> 01:20:23: so and so is is, you know, reporting to the
01:20:23 --> 01:20:24: standard and.
01:20:24 --> 01:20:26: Is and a lot of people are putting these things
01:20:26 --> 01:20:30: in their sustainability reports and again, getting back to the
01:20:30 --> 01:20:33: need for the authenticity behind those and the credibility of
01:20:33 --> 01:20:37: sort of third party validation of those statements is is
01:20:37 --> 01:20:39: in my opinion, it's quite necessary.
01:20:39 --> 01:20:41: You know, you can think about like an organic apple,
01:20:41 --> 01:20:44: you need that sticker to know that it's actually organic
01:20:44 --> 01:20:45: in the same way.
01:20:45 --> 01:20:49: But once we get more and more evidence of what's
01:20:49 --> 01:20:53: possible, it it, it sort of knocks away that argument.
01:20:53 --> 01:20:54: Oh, we can't.
01:20:54 --> 01:20:56: We can't because blah blah blah.
01:20:56 --> 01:20:57: Yeah, that.
01:20:57 --> 01:20:58: Thank you so much.
01:20:59 --> 01:21:00: That's amazing.
01:21:02 --> 01:21:03: Really good question.
01:21:04 --> 01:21:04: All right.
01:21:04 --> 01:21:07: We've got Marielle, Christine and Tyler.
01:21:10 --> 01:21:11: Right.
01:21:13 --> 01:21:13: Hi, go ahead.
01:21:14 --> 01:21:14: Hi.
01:21:14 --> 01:21:18: So again, as architects and engineers again we're working
on
01:21:18 --> 01:21:24: large scale industrial developments and we're increasingly
seeing water stewardship
become a key consideration early in planning.
01:21:27 --> 01:21:31: So looking ahead five years, just wondering would you see
01:21:31 --> 01:21:36: the biggest water related constraints impacting data center
growth and
01:21:36 --> 01:21:39: how should we as again designers be responding today to
01:21:39 --> 01:21:41: stay ahead of those limitations?
01:21:46 --> 01:21:47: Thank you.
01:21:47 --> 01:21:50: I heard water in the question, so I guess I'll,
01:21:50 --> 01:21:51: I'll start off.
01:21:51 --> 01:21:55: It's, it's, it's all again, it's all very local and
01:21:55 --> 01:21:59: there are places where you should not build a data
01:21:59 --> 01:22:04: center because of water scarcity and that you cannot find
any relief for that.
01:22:04 --> 01:22:05: But that being said, you can take, you can take
01:22:06 --> 01:22:09: water from the middle of Pacific Ocean, you can desalinate
01:22:09 --> 01:22:13:

01:22:13 --> 01:22:16: it and send it anywhere in the world and use

01:22:16 --> 01:22:19: it for any possible use, including drinking.

01:22:19 --> 01:22:21: And so it's possible to do.

01:22:21 --> 01:22:24: And it's just a question of cost and are you

01:22:24 --> 01:22:26: willing to pay that cost?

01:22:26 --> 01:22:30: And unfortunately, as, as was said, I think Mary had

01:22:30 --> 01:22:33: mentioned this, is that water's been cheap.

01:22:34 --> 01:22:36: So people are not used to spending for water.

01:22:36 --> 01:22:39: People understand when they say they understand the

electric bills

01:22:39 --> 01:22:41: are so high and cost so much money, but they're

01:22:41 --> 01:22:43: not used to seeing the same thing for water.

01:22:43 --> 01:22:45: And, you know, they're going to have to get used

01:22:45 --> 01:22:48: to that over time because water is going to get

01:22:48 --> 01:22:49: more and more expensive.

01:22:52 --> 01:22:54: Well, and I, I would maybe add that, you know,

01:22:54 --> 01:22:59: when you're thinking about designing data centers, I think particularly

01:22:59 --> 01:23:02: with, with the intensity and the density of AI demand,

01:23:02 --> 01:23:05: there is a trend toward going toward air cooled just

01:23:05 --> 01:23:08: to be able to handle those new additional loads.

01:23:08 --> 01:23:10: And so if you go air cooled, there may be

01:23:10 --> 01:23:13: an energy penalty, but that energy penalty can be dealt

01:23:13 --> 01:23:15: with through renewable energy.

01:23:15 --> 01:23:18: So, you know, water and energy are not distinct from

01:23:18 --> 01:23:20: one another in this case.

01:23:20 --> 01:23:23: And good water policy is good energy policy.

01:23:23 --> 01:23:25: So we should be thinking about it that way.

01:23:27 --> 01:23:27: Thank you.

01:23:29 --> 01:23:32: Energy, water and money.

01:23:33 --> 01:23:33: You know.

01:23:33 --> 01:23:34: How do you find that?

01:23:34 --> 01:23:45: That sweet spot, Arianne?

01:23:45 --> 01:23:46: You're on mute.

01:23:48 --> 01:23:48: Thank you.

01:23:49 --> 01:23:56: Chris, I was wondering if Christine is still here, Christine

01:23:56 --> 01:23:57: or Tyler.

01:23:57 --> 01:24:06: All right.

01:24:06 --> 01:24:08: Well, since I'm not hearing from either of you, I'm

01:24:09 --> 01:24:11: going to go into our our conclusion slides.

01:24:11 --> 01:24:14: Since we have 3 minutes left, we'd love to hear

01:24:14 --> 01:24:14: from you guys.

01:24:14 --> 01:24:17: If you have more questions, please put them in the chat box.

01:24:17 --> 01:24:19: The speakers are paying attention there.

01:24:20 --> 01:24:24: Let me get to the right slides.

01:24:28 --> 01:24:32: All right, some quick notes.

01:24:32 --> 01:24:34: Can you guys see my slides here?

01:24:37 --> 01:24:37: Great.

01:24:37 --> 01:24:38: OK.

01:24:38 --> 01:24:41: So UI is currently working on a report related to

01:24:41 --> 01:24:42: data centers.

01:24:42 --> 01:24:46: I think there this report is more focused on energy

01:24:46 --> 01:24:49: use, but our hope is that we're going to be

01:24:49 --> 01:24:53: talking about all sorts of resource constraints and data center

01:24:53 --> 01:24:56: impacts and best practices going forward.

01:24:57 --> 01:25:00: We have local round tables that we're going to be

01:25:00 --> 01:25:03: working on between the public and private sector in Colorado.

01:25:03 --> 01:25:06: If you are in Colorado, please reach out to us.

01:25:06 --> 01:25:08: We'd love to hear from you and work with you.

01:25:08 --> 01:25:11: These these are completely covered financially by the state of

01:25:11 --> 01:25:12: Colorado.

01:25:13 --> 01:25:16: We're also working on documenting the business case for water

01:25:16 --> 01:25:18: wise, land uses and real estate.

01:25:19 --> 01:25:21: If you know of case studies and we haven't talked

01:25:21 --> 01:25:23: to you already, please reach out to us.

01:25:23 --> 01:25:24: We'd love to hear from you.

01:25:26 --> 01:25:29: Here is the list of upcoming meeting topics.

01:25:30 --> 01:25:33: Since we're really running out of time, I would love

01:25:33 --> 01:25:36: for you to just put a message in the chat

01:25:36 --> 01:25:40: box and or e-mail me with topic ideas, speaker ideas.

01:25:40 --> 01:25:43: If you want to change the order of anything, that's

01:25:43 --> 01:25:44: totally fine.

01:25:44 --> 01:25:45: We want to hear from you.

01:25:45 --> 01:25:48: Our next meeting is on the Water Demand calculator.

01:25:48 --> 01:25:51: The reason why this is so exciting is because the

01:25:51 --> 01:25:55: water demand calculator can be used to reduce development tap

01:25:55 --> 01:26:00: fees and increase water conservation, which is wonderful so that

01:26:00 --> 01:26:02: that we have that to look forward to.

01:26:03 --> 01:26:07: The 2026 Resilience Summit is coming up on May 8th

01:26:07 --> 01:26:08: in Nashville, TN.

01:26:08 --> 01:26:13: It's a whole day all about different resilience topics including water and you can sign up with this QR code.

01:26:13 --> 01:26:15: It's in conjunction with ULI Spring Meeting so you can

01:26:16 --> 01:26:19: get all of this great content alongside your Spring Meeting

01:26:19 --> 01:26:22: content.

01:26:22 --> 01:26:22: Hey, Marianne, would you just mind going back a few

01:26:24 --> 01:26:26: slides really quick?

01:26:26 --> 01:26:27: I'm so sorry to that resources slide just for 30

01:26:27 --> 01:26:29: seconds for me to grab a shot of it.

01:26:29 --> 01:26:31: Yeah, go ahead, 123, OK.

01:26:31 --> 01:26:36: You're all good.

01:26:38 --> 01:26:38: You're all good.

01:26:38 --> 01:26:39: Thank you so much.

01:26:39 --> 01:26:39: Yep.

01:26:40 --> 01:26:41: And then, Beth, are you here?

01:26:41 --> 01:26:43: I am here do.

01:26:44 --> 01:26:45: You want to talk a little bit about this exchange

01:26:46 --> 01:26:48: of?

01:26:48 --> 01:26:49: Course Hi everyone.

01:26:49 --> 01:26:53: I'm Beth Nelson, I'm Marianne's colleague based here in Washington,

01:26:53 --> 01:26:56: DC and I manage a program here called the Lewis

01:26:56 --> 01:27:01: Center Sustainability Exchange, which is a bi monthly virtual discussion

01:27:01 --> 01:27:04: went to increase knowledge around areas that may not be

01:27:04 --> 01:27:09: familiar to us, but also to increase conversation and collaboration.

01:27:09 --> 01:27:10: So we would love for you to join.

01:27:11 --> 01:27:14: Our next session is on sustainable transportation on March 12th,

01:27:14 --> 01:27:17: and then we're actually going to be focusing on the

01:27:17 --> 01:27:21: report port that Marianne mentioned earlier on data centers and

01:27:21 --> 01:27:22: AI on May 21st.

01:27:22 --> 01:27:23: We hope you can join us.

01:27:24 --> 01:27:28: To sign up and learn more, go to uli.org/LC Exchange,

01:27:28 --> 01:27:30: which I just shared in the chat.

01:27:31 --> 01:27:33: I'll share it again since there are a lot of

01:27:33 --> 01:27:35: questions that came in after that.

01:27:35 --> 01:27:37: So you it's not lost, but we hope to see

01:27:37 --> 01:27:39: you there and please feel free to reach out to

01:27:40 --> 01:27:42: Marianne or myself For more information.

01:27:43 --> 01:27:43: Thank you, Beth.

01:27:43 --> 01:27:43: Beth.

01:27:44 --> 01:27:45: Where is the Lewis Center?

01:27:47 --> 01:27:50: So, so the Lewis Center is a global center and

01:27:50 --> 01:27:53: but we are most of the staff is based here

01:27:53 --> 01:27:57: in Washington, DC, but this is a virtual offering, OK.

01:27:58 --> 01:27:58: Yeah.

01:28:00 --> 01:28:02: All right, Amanda.

01:28:04 --> 01:28:04: I thanks.

01:28:04 --> 01:28:07: I'll I'll go through these quickly since I know we're

01:28:07 --> 01:28:11: at time I'm remembering the Christophe program Manager with Alliance

01:28:11 --> 01:28:12: for Water Efficiency.

01:28:12 --> 01:28:15: You can go ahead to the next slide I wanted

01:28:15 --> 01:28:16: to share.

01:28:16 --> 01:28:20: Relevant to today's meeting, AW partnered with Los Alamos National

01:28:20 --> 01:28:24: Laboratory and Metro North Georgia Water Planning District.

01:28:24 --> 01:28:28: We are developing a data center primer that's primarily going

01:28:28 --> 01:28:32: to be for local water providers and water utility professionals

01:28:32 --> 01:28:35: and we're planning to complete this primer in spring of

01:28:35 --> 01:28:35: 2026.

01:28:36 --> 01:28:37: So I wanted to spotlight that for the group.

01:28:39 --> 01:28:40: Next slide, please.

01:28:42 --> 01:28:44: Also wanted to share a save the date for AW

01:28:44 --> 01:28:49: BS 4th Annual Water Efficiency and Conservation Symposium that's happening

01:28:49 --> 01:28:51: August 4 through 6 in Chicago.

01:28:52 --> 01:28:55: We have a couple of call to actions for symposium.

01:28:55 --> 01:28:57: You'll go to the next slide, Marianne.

01:28:59 --> 01:29:00: Our call for abstracts.

01:29:00 --> 01:29:03: Is open right now through March 9th.

01:29:04 --> 01:29:07: The core topics that we're seeking are listed here on

01:29:07 --> 01:29:09: the slide and I will pop the link here in

01:29:09 --> 01:29:11: the chat and it's also linked on the slide if

01:29:11 --> 01:29:13: they're going to be sent later.

01:29:14 --> 01:29:17: So we welcome all abstracts relating to these topics.

01:29:18 --> 01:29:21: And then next slide, we are also calling for member

01:29:21 --> 01:29:25: nominated awards for the AW members who are on today's call.

01:29:26 --> 01:29:26: So definitely don't miss the opportunity to highlight the great

01:29:30 --> 01:29:33: work that's happening across the country and North America more

01:29:33 --> 01:29:34: broadly.

01:29:34 --> 01:29:38: In water conservation, we've got 4 awards, Innovation Excellence, Inequity,

01:29:38 --> 01:29:40: Up and Comer and Water Star.

01:29:42 --> 01:29:45: And then lastly, I also wanted to share an upcoming

01:29:45 --> 01:29:50: webinar that we are hosting in partnership with EPA Watersense

01:29:50 --> 01:29:54: that's part of our yearly outdoor water use webinar series.

01:29:54 --> 01:29:58: This webinar will tackle the topic of integrative approaches for

01:29:58 --> 01:30:00: efficiency and storm water management.

01:30:00 --> 01:30:04: And we've got speakers from the Municipal Water District of

01:30:04 --> 01:30:08: Orange County, the Water Reclamation District of Greater Chicago, and

01:30:08 --> 01:30:09: Friends of the Chicago River.

01:30:10 --> 01:30:11: So we hope to see you all.

01:30:11 --> 01:30:13: There and again I'll put these links in the.

01:30:18 --> 01:30:18: Thank you.

01:30:18 --> 01:30:21: Amanda, do we have someone from Sonoran on the call?

01:30:27 --> 01:30:27: Right.

01:30:27 --> 01:30:29: I'm not hearing somebody, so I'll just pitch it for

01:30:30 --> 01:30:30: them.

01:30:30 --> 01:30:34: Growing Watersmart is a program through the Sonoran Institute in

01:30:34 --> 01:30:37: the Babbitt Center for Land and Water Policy.

01:30:37 --> 01:30:41: They have a meeting coming up on local policies for

01:30:41 --> 01:30:44: large water uses and I think what I'll do is

01:30:44 --> 01:30:47: I'll just follow in my follow up e-mail with the

01:30:47 --> 01:30:48: recording and links.

01:30:48 --> 01:30:50: I'll make sure to include the link for this event

01:30:50 --> 01:30:51: there as well.

01:30:52 --> 01:30:55: We would love to hear from you all about your

01:30:55 --> 01:30:59: experience with the Water Wise Development Coalition, this meeting, your

01:30:59 --> 01:31:02: ideas for upcoming topics and speakers.

01:31:02 --> 01:31:05: This is the way that you can provide that pretty easily.

01:31:05 --> 01:31:06: You're also welcome to e-mail me, but I will be

01:31:09 --> 01:31:12: out on maternity leave starting next week, so the survey

01:31:12 --> 01:31:14: is the best way to reach out.

01:31:16 --> 01:31:19: And I will also share my e-mail in the chat

01:31:19 --> 01:31:23: for anyone who wants to reach out to a live

01:31:23 --> 01:31:25: person in Marianne's absence.

01:31:26 --> 01:31:26: Thank you, Beth.

01:31:27 --> 01:31:29: Of course, that is all.

01:31:29 --> 01:31:32: Thank you all so much for taking the time to

01:31:32 --> 01:31:33: join us today.

01:31:33 --> 01:31:37: A huge thank you to our speakers who dedicated their

01:31:37 --> 01:31:40: time and effort to this meeting to talk to you

01:31:40 --> 01:31:42: all about data center best practices.

01:31:42 --> 01:31:46: And we will be following up with resources.

01:31:46 --> 01:31:48: So please stay in touch and thank you all again.

01:31:49 --> 01:31:50: Great.

01:31:50 --> 01:31:50: Thank you.

01:31:55 --> 01:31:56: Thank you again for the opportunity.

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