Yousef Baig (00:04:58):

Well, I want to thank you all for being here this afternoon. Obviously there's a lot of great programming taking place, so all of us on stage appreciate your time and attention. Just to kind of give you a rundown of what to expect today we'll do about 45 minutes of discussion talking through water su supply conundrums facing California. Collect some wisdom from our three brilliant panelists and use the remaining time for q and a. By the end, my hope is that you'll be able to take home a new insight something actionable that can answer that ensuing question of what now. So with that, let's meet our panel starting right here on my left, Alvarez Riva Bo is an assistant professor with UCLA's Department of Civil and Environmental Engineering and Institute of the Environment and Sustainability. He's one of the top minds on groundwater issues and, and helped the author of P P I C report last month that spelled out how the San Joaquin Valley can adapt as water scarcity remains the norm. Please give a round of applause for Alvar.

Yousef Baig (00:05:56):

Seat in the middle is Heather Cooley, director of research at the Pacific Institute. That's a think tank dedicated to investigating the world's most pressing water challenges. She was the lead author last year on a report that laid out how urban areas can dramatically increase water supply through efficiency, reuse in storm water capture. Please give a hand for Heather. And then finally, Greg Pierce wears a lot of hats for U C L A. He is the co-executive director of the Lukin Center for Innovation and Director of the Human Right to Water Solutions Lab. He's doing such important work on water affordability and access. Maybe you saw his ticking time bomb quote in LA Times piece recently that set the stage for an eye-opening look at our failing water systems. Please give a hand to Greg.

Yousef Baig (00:06:42):

So, I, I wanna briefly just turn the clock back to 1978. It was a dramatic year in the state's political scenes. San Francisco Supervisor Harvey Milk and Mayor George Moscone were assassinated. Their board president, Diane Feinstein, who announced the killings became mayor and never looked back. Anti-Tax fervor led to the polarizing and probably ever problematic passage of Proposition 13. And Jerry Brown was elect reelected to his first second term as governor. State lawmakers were thinking about water supply. The legislature sent a joint resolution, and this is both houses are urging the White House and federal agencies to support a $60 million. That's a lot of money in 1978 to tow icebergs from Antarctica to Southern California. For some reason, Jimmy Carter didn't bite. Fast forward to today, the the stakes are pretty serious in drought years. Communities in the San Joaquin Valley, north Coast and elsewhere running out of water despite a landmark groundwater law, wells are drying up, especially in overlooked Latino communities.

Yousef Baig (00:07:44):

Dams don't have enough water to generate electricity. Many farmers are buckling, snowpack is disappearing. Special interest in warring factions are just suffocating so much of the discourse. So, as we've heard today and this morning, we kind of get a sense of what the stakes are. Today we're gonna talk about policy solutions and innovations that with political will and investment could make a difference in the difficult years ahead. So there, I wanna start with you. You know, this week, Cal matters reported that state regulators finally unveiled conservation mandates that would require water supplier serving 95% of the population to consume less forcing cities and local agencies to, to figure out a constellation of new strategies. Most urban areas are actually on track to reach these recurring five-year targets already. Which kind of just begs the question, are these mandates enough?

Heather Cooley (00:08:35):

Yeah, great question. So let me take a step back and, and start you know, and acknowledge in many of our urban areas, in fact, across the state, we are using less water today than we have in the past, despite population growth, despite economic growth. And that's because of water conservation and efficiency. We have made investments in taking out old clients fixtures, starting the transition of our landscapes. And those have made a real difference. It's enabled us, again, to grow and use less water. We don't still have droughts increasingly severe droughts. We're facing dryer future. We also have, they have been overlapping on the groundwater and have been picking too much out of our rivers. Its stream. And so there is a, a desperate need to be. Back in 2007 there was a policy Senate bill seven x seven, and that was to reduce urban water use by 20% by 2020. And that was again, focused on urban water suppliers. There are separate efforts around ag and I'm sure we'll talk about that.

Yousef Baig (00:09:43):

Oh, we'll, so

Heather Cooley (00:09:44):

<Laugh> so you know what we found in many of the time, but we, we can't do it. This is too hard. We've already made these investments, we've gotten the low hanging fruit. And lo and behold we did, in fact, we exceeded the 20% reduction by 2020. Part of that was because of the drought. 2012 drought was very severe, and again, California stepped up and dramatically reduce their use as we approached 2020. And there was some criticism of of 20 20 20 because committee felt and said, well, we've been doing a lot for a long time. Some have been doing anything that's not fair. 20%, I'm at a hundred gallons, other communities are at 200 gallons, 300 gallons protein per. So as we began to look forward again to 25 and 2030 and 2035, what, what do we do? How do we keep driving efficiency?

Heather Cooley (00:10:36):

There was a request by water suppliers to come up with a different approach and to really develop an efficiency standard. And through this standard, there will be individual objectives for urban water suppliers to reduce their use. And it'll be in varying amounts for those that have already done a lot. The amount required will be relatively small for those who haven't it, it's more and so those were just released. And as you noted a large number of water suppliers in California aren't gonna have to do much to meet this standard, and some are gonna have to cut by 20, even 30%. To the question of whether it's enough. You know, I don't, this is a standard. It's meant to sort of be the floor, is how I look at it. Many communities are going to have be more because of the, the climate change and the impacts on water because of our needs to protect and restore ecosystem. So it won't be enough in that it's gonna solve all of our problems, but I do think it's a good floor and provides kind of a foundation and <inaudible>.

Yousef Baig (00:11:38):

Yeah. Greg, what do you think about this? I mean, it's Scottsdale, Arizona banned lawns on all new single family homes this year. Is that kind of mandate something California should enact?

Gregory Pierce (00:11:49):

I don't think we're there yet, but I do think the bands have been discussed, and I think some places on quote unquote nonfunctional for he areas, especially in building medias somewhere we should be going everywhere in California. And I do think even with these standards talking right now and that to go further in the future on conservation plenty of other areas have gone much, much further than we've

gone, even though we've come a long way. But no, I don't think we're to the point of gaining install installation of lawns. That's a fairly new policy. And maybe another, yeah, just a couple months ago. It's been done in Nevada and Arizona, but just in the last two years. So again, I don't think we should do that. Maybe localities should do that, but certainly not statewide.

Yousef Baig (00:12:41):

Yeah. Avar, as you know, obviously farms use roughly 40% of California's water. Agriculture has largely done everything. It's been asked, adopting drip irrigation, adhering to regulations, accepting reluctantly smaller water deliveries and dry years years like this one will increasingly become rarer. I mean, what is the next phase of adaptation for agriculture?

Alvar Escriva-Bou (00:13:05):

Thanks so much for the question and thanks for inviting me. So that's a really good question. And, and actually I would say that's even harder than, than for cities. Just following up on the previous conversations you know, cities have been doing a great job in the past 20, 30 years, and we've seen that in between the two, 2012 16 drought and the 20 20 22 drought. We have seen really, really small problems in the state, in cities, and that it's a point that cities have been actually doing their, their homework and they have been investing in conservation efficiency, but also in alternative supplies. The ag situation is much more complex. The situation is that we have been using more wire than we have for a hundred years in California, especially in the San Joaquin Valley, especially also in the central coast in some other places.

Alvar Escriva-Bou (00:13:53):

And while in cities, you know, we, it's relatively easier for cities to pay for new infrastructure farmers just have, just have the money to invest depending on how much they make. And you know that farmers don't make a lot of money, very careful of water. So what happens is that they don't have a lot of options to, to bring new supplies. For example, a lot of people talk about, talks about the pollination, the elimination. It's, it's not an option for farmers in California. Sea water desination, there's some places that can be used ground. We'll get to that. Yeah, for sure. But so what, what happens, the only solution actually is that we are gonna see relatively sizable and important decrease in water use. And that means actually putting current farms into other uses. And that's actually the best solution that you can do if you think that farmers want to make also money from other places.

Alvar Escriva-Bou (00:14:51):

So there's other options right now that's solar development. So we could have two policies at the same time, reducing wire use at the same time, increasing energy efficiency and renewables in the state. We could also think about other options like using some lands that are, for example, annex to the rivers or corn wetlands or stuff. So providing public money for public benefits. So with farmers, actually this, you know, we could provide incentives for farmers to actually use these lands. I mean, to allow these farms to be used to recreational benefits, to environmental benefits. And there's other options that we have been, have been studying. But, you know, the, the reality is that in the next 20 years, mandated by sigma, but also because climate change is here, there's many the reality of this variability of water, you know, water that we have in California. It's, you know, no longer every, everybody knows that, and farmers are feeling that. So the reality is that we are gonna see a reduction, maybe 10, 15% of, of farm acreage in the state, and the best we can see is we can do, it's actually try to incentivize farmers to make

the right decisions and to try to provide additional incomes from other, other ways while reducing water use.

Heather Cooley (00:16:10):

I was just gonna add, you know, I think too as, as Alvar noted, the amount of water available for ag is going to go down. We've been taking, living, living beyond our means, particularly at groundwater. And so, you know, it's gonna be a combination of factors that farmer and agriculture are gonna have to do to adapt. I think efficiency, moving towards drip irrigation and micro sprinklers will be one of those moving away from the flood irrigation. Our overhead sprinklers it's gonna be building soil health so that can pull onto that water when it, when it's available and when it's applied. It's gonna be a recharge. One of the issues we're also dealing with our temperatures and these poor intense you know, rainfall events is, is a risk of flooding. And so, and there are already some, some really innovative projects happening to try to take some of that water, not all of that, but to take some of that water and, and, and spread it on land, agricultural land to recharge. And then, you know, we are going have to farm less land. And I think that's, you know, some of the work all our colleagues have been looking at is how do we help support some of these communities, transition their economy from one that's over reliant use of water, beyond what's available towards something that's more sustainable. And so it's, it's, it's a tough problem. And, and it's gonna take a lot different folks.

Yousef Baig (00:17:50):

Yeah, absolutely. Greg, I want to get you in on this one too. I mean, obviously in an increasingly scarce future with these extremely dry periods then to kind of these big bouts of random wetness. I mean where does agriculture go next in this next phase? I mean, what would you add to that?

Gregory Pierce (00:18:07):

I mean, not, not much honestly, except to, and I think I agree with my phone count so they can correct me if I'm wrong. Just note again, I think the still agriculture percent of the water and state so that's the context we're coming from. I give people nodding their heads both so that q&a, if you're certainly in terms of human use, that's roughly true. You're counting the environment which I don't think you should, you should, the number of changes. But yeah, I think efficiency still needs to improve. It's tough to improve, especially if you're a small farmer. Voluntary trading, which obviously San Diego is the best example of yeah, we thought we would see more of, but it's slow in the coming is, is a big part of the equation. And moving to higher value crops is definitely part of the economic equation as well as, you know, as a last resort, I think following and transitioning farms entirely. But again, I defer to maybe what Alvar is about to say on this.

Yousef Baig (00:19:14):

Yeah, go for it. Alvar.

Alvar Escriva-Bou (00:19:15):

No, I, I agree with my finalist too, and I just wanted to bring a positive note because I was also seeing people <laugh> and you ask us I being, being positive, and actually we, we just published a report February this year, and, you know, there's a lot of, of, you know, talk kind of, this is kind of the end of agriculture in California, and I want to bring the positive, no, this is not, we are talking maybe 10, 15%. That's important. Of course, there will be a lot of communities affected as, as Heather was pointing out, recharge is, I started the, the train of thought that there's not many options available for farmers, but

actually recharge is cheap and you can use your own irrigation infrastructure to do recharge. There's a lot of efforts going on right now in the state, especially because this last year was really wet.

Alvar Escriva-Bou (00:20:04):

And because there's one policy need here, we actually realized that, you know, we are not doing recharge at the way that we should do it, especially with this changing climate. But finally, the last point I wanted to make on this positive note is that farms farmers in California have been increasing their value of production for the past, for the past 40 years. It's, you know, of they have been innovating, they have been bringing new products, they have been changing the crops doing wire trading, and this is gonna keep doing, you know, this is gonna keep happening in the next 20 years. And we did a, this reporting in February that even with the reductions in wire use that we expect in the next 20 years, we expect that because of increasing yields, increased productivity,

Yousef Baig (00:20:47):

They can actually increase economic output. And that's, you know, it's, of course, it's not what everyone would like, everyone would like to keep farming what they were doing, but we can adapt and we can still being the major food produce in the state and being a major agricultural powerhouse. Yeah, I, I, I noticed like before this panel that the Department of Food and Ag in the state noted that the agriculture sector itself has actually increased sales. I mean, the margins are growing as a sector, right? The, the harm is more at an individual level, right? It's, it's who is able to adapt and, and who isn't. And so that's a, that's a really important point. I, I wanna add just like one more layer to this before we move on to the next discussion. Heather, you co-authored a report a few years ago that examined the connection between water and energy and how that fits into the state's effort to reduce emissions. Could you just explain for us like why it's so important to maintain healthy groundwater levels and kind of avoid the over pumping that is at this nexus?

Heather Cooley (00:21:45):

Yeah, so I've been working on the issue of sort of water energy and the water energy nexus for a number of years. And, and first I think, you know, it's important for people to recognize, yes, when we talk about water energy, we use water for hydropower generation for other types of, of energy generation. But water, the, the capturing, main treating, using, treating of wastewater, distributing up on on agricultural land uses a tremendous amount of energy. In fact, about 20% of the states electricity into water. And about a third of our natural gas use is also water. So, and, and fuel as well. So there is a, a huge connection between water and energy. And so what we tried to look at is what's that connection between water and energy, greenhouse gases and what does it look like in, into the future?

Heather Cooley (00:22:36):

And so we did some, some scenarios out into the future, both for urban and agricultural and found that we can dramatically cut our energy use and greenhouse gas emissions through water conservation interface. That is been key for us in trying to meet not only our water goals, but also our energy and climate goals. As a part of this work we looked at around agriculture, and I know we talked about, you know, agriculture uses about four times as much water than the urban sector. It's really the urban sector that's nine times more energy intensive and greathouse gas intensive. So if you're thinking about this more energy, the focus is on urban. That being said to your question around declining groundwater levels, as those groundwater levels decline, agriculture has to be more and more energy. So there's a potential energy opportunity stop that decline now. But there's an energy savings opportunity there,

recharge as well. We're elevate those opportunity for energy savings. So these are gonna be really critical too, because we talked about climate change, the driver for all of the challenges we're, it's not the only issue, but it's a big issue. It's, and so as we look to solutions, we have to think about reducing our energy water

Yousef Baig (00:24:06):

Solution. Yeah. Greg, you have a thread on that? Yeah,

Gregory Pierce (00:24:08):

I just wanted to add that the two big sources, sort of new sources of water that people talk about, I about urban areas recycling are energy intensive. I'm actually not so worried about that because I think the energy utilities are moving and they're mandated to move toward cleaner, cleaner sources. In terms of emissions, it certainly matters, but if they energy utilities meet their targets, I don't think it matters so much in that respect. But it certainly still matters in the cost. And the cost of energies is probably gonna go on the cost of water, given the way that the energy util are mandated as vols.

Yousef Baig (00:24:49):

Yeah. I wanna, you mentioned desalination, I want to go there for a second. So California has at least a dozen plants now and the state is making some pretty hefty investments in bringing some of the state's biggest environmental agencies together to try and streamline projects to make this kind of once left field idea, a major part of the governor's strategy. Last year, the Coastal Commission decided the fate of two controversial projects approving one in Orange County and then turning down a $1.4 billion project in Huntington Beach that had been going on for almost two decades. And so Greg, I know, I know you followed these two closely. I mean, what, if anything, can we distill from those two decisions?

Gregory Pierce (00:25:28):

Yeah, I think the bottom line, the no one, and I think to back up the decision to reject one de plant 30 miles down the coast from another in Orange County reflects that there's 3000 water systems in the state. And to a large extent, except if you have a metropolitan or San Diego County Water Authority, they're on their own. They rely on very different sources. They have very different situations in terms of the sources they rely on. So with respect to the Huntington Beach versus the South Coast plants, again, the 30 miles separated on the coast in Orange County, I think a lot of the decision was about a, about the environmental impacts where there was a pretty clear cut advantage for the South Coast plant, but also about the relative need for that water in those two places as well as the third factor really being the difference in ownership and the difference in expected costs.

Gregory Pierce (00:26:25):

But those factors vary across all the big cases that you see. And there is just gonna be continued complexity. I will also say, because all of the estimates around cost are projections, <laugh>, the, the price of imported water is rising the projection for decel always get exceeded when we actually build the plants and recycling. The big investments also are, you know, estimated but fall somewhere in between those sources generally. And they're all gonna continue to vary as we see you know, imported sources affected. And again, the price of energy is gonna be sort of a, a factor that we can't fully anticipate in terms of its direction. Yeah.

Yousef Baig (00:27:08):

Alvar, the, the governor wants to expand brackish groundwater desalination by 28,000 acre feet by the end of the decade. And for those unfamiliar brackish water is like a semi salty water that occurs naturally in rivers and estuaries. So his administration pitched in $5 million to, to help a Fresno County effort that would help some pretty desperate San Joaquin Valley communities. Given the realities of groundwater systems, is desalination a worthwhile investment in more inland areas?

Alvar Escriva-Bou (00:27:36):

So, actually, this is a really interesting question. I think not many people know that first desalination plant in California was an inland plant with BRAC desalination and was oriented to the culture. It was in 1966, I think, or around that, that time. The benefits of, of inland or brac desalination, it's cheaper, you know brackish water, it's ground water has more salt than that fresh water, but it's much less saltier than ocean water. So it's much easier to do. I mean it's less costly, less energy intensive, and we can do it still. It may be expensive, actually, here in South California, we do a lot of, of brackish desalination for urban users. So, and also for, for ag, it's an option. There's, there's as well as Greg was comment was mentioning all of this is context specific, so you are gonna see what do you do with, with your brine with the, with, with the environmental impacts that it's causing.

Alvar Escriva-Bou (00:28:37):

And in the San Jo, Kim Valley, what you were asking, there's some places actually that salinity is increasing so much that plants don't tend actually take that water. Hmm. So if they want to keep growing they have actually to do this, this SA nation, and it's, it's expensive. And you know, what, what the good things also for both inland and, and seawater, that's how a lot of technology, new technology is going. And I think that this, this is gonna keep improving. It will still be more expensive than, than surface water or maybe from natural ground water, but we are getting to a point where we have to look at every option. And, and that's what, what's happening in, in these places. I wanted just to make a final comment also on, on Greg, that I think he made a really great statements.

Alvar Escriva-Bou (00:29:24):

We sometimes hear this point, and, you know, why, why we do sea water salination, for example, if it's so expensive and, you know, San Diego is a really good place to talk about this see water desalination, it's, you know, why do we do insurances? See, water desalination can be thought as an insurance you are paying a really high rate for, for something that is really rare to happen, but it can happen. And especially in places like San Diego, you could get no state water project, no Colorado water. So what you do, I mean, seawater is not the major source of San Diego, but I'm just saying that getting to, to Greg's point, it's context specific. You know, this kind of, kind of true fake truths from, you know, see what is al cations is always bad or always good or something. So no, that, that's not how it works in California. California is really complex. There's many different systems and many times there's reasons for, for the things that we do. Yeah. Heather, go for it.

Heather Cooley (00:30:27):

Just chiming in on, on sort of desalination the idea of sort of looking at what's available locally, mean desalination tends, sea water desalination tends to be the most expensive supply. It's energy intensive. That's one of the reasons for the higher cost one of the key reasons. But then you also have to deal with the brine and intake. Those have impacts our marine environment. So, you know, the impacts are, are there I, I think though communities really need and, and, and there it is a reliable supply and that is important. There is, people are often willing to pay a little more for reliable supply, the value for that

benefit, but it's not infinite. I think that's important. And the industry, the community hasn't done a great job in trying to understand how more should we be paying credit reliable supply.

Heather Cooley (00:31:19):

But what I've looked at our work that we've done around the state is what we find is that communities, many communities have far cheaper options available. They should invest first. Water conservation and efficiency, we talked a bit about it. If you look at the cost, it's not free that there is a cost for efficiency when you buy a more efficiency cost. But as you look at savings and the benefits over the, it's far cheaper for that additional cost for efficiency than it's for some, for many of these supply options. So conservation and efficiency, we've done a lot, a lot more, particularly those in addition recycled water, also more expensive. But in many communities, we're, we're using up 25% of the wastewater that we need at once, and then we're <inaudible>. We could be doing a lot more recycling. It's less expensive waste. And I would even argue, if you're gonna go to the trouble of seawater, you don't wanna use that water once. You wanna use that water as many times. So I do think we do need to think, think about the low context. We also need to develop these in a way that, that sort of makes economic sense and it'll help to support <inaudible>.

Yousef Baig (00:32:49):

Yeah. And I appreciate that you're alluding to, to reuse and recycling. 'cause That's where we wanna go next. Before we do, I just, you've been researching desalination for, for almost two decades now, right? And so I'm just curious, like, could you just put into context like how this conversation has changed over time and why it's suddenly garnering so much money and interest and political you know attention? Yeah,

Heather Cooley (00:33:12):

So I, I have been following, we did our first work on this back first study on this back in 2006. Which one came out. We worked on longer. At that time there were about 21 proposed plants up and down the coast. Of those, about one or two. There was a lot of interest at the time. There was some numbers floating around, and it was, it was penny cheap. It was $1,200 an acre foot. To give you context, I think San Diego's playing about $3,000 an acre foot. So the costs that were floating around were accurate. To your earlier point about estimates and there was just a lot of excitement, right? Oh, well, the cost of imported water's going up. This is cheaper. Once people started digging into it, they realized, no, it's essentially not that cheap expected. And, and there's other, there's other options and cheaper options.

Heather Cooley (00:34:04):

So, you know, many of those proposed plants, again, those 2021 plants at that time really put on hold agencies started continuing on some of these cheaper alternatives. And when we look now yes to Carlsbad large, 50 million gallon largest in North America ward decisions on other ones. And, and whether or not those, we don't know, we don't even once it's approved but the, the conversation has changed quite a bit. I think though there is still this tendency that to think that it's the Silver Bowl. We have this coast, we have a lot of it up and down the state. Why don't we just tap it? But it's, it's expensive. There's lots of other options first. Yeah. So I, you think there's much broader range?

Yousef Baig (00:34:51):

Yeah. So I, I wanna share a few numbers of the room because October 1st marked the end of the water year. So statewide, California saw 141% of its average rainfall. The state received more than 33 and a

half inches of rain. That was nearly twice the amount of rain recorded during the previous water year, and nearly three times the amount from the year prior. It was a miracle year in every sense after three of our driest years in recorded history. So naturally stormwater capture was on so many people's water bingo card this year. Heather, I, I wanna start with you again on this one. Can you just briefly explain for folks like what they're referring to when they're talking about stormwater capture and what your research has laid out in terms of its potential?

Heather Cooley (00:35:35):

Yeah, so that's a, a great question and thank you for, for asking. We as, as was, as was noted, released this study just last year looking at urban runoff and storm water capture and what the opportunities are, you know, historically we've urbanized areas. We've looked at sort of storm water as a, as a liability, and we've designed our cities to sort of get that water out as quickly as possible to avoid flood risk. And, and though what we did in that was created water quality issues, right? Where all of that storm water has other things that we're now dumping into our oceans, our rivers and streams. There has been some recognition over the past 10, 15 years that storm water is an asset. It's something that we are using capturing and using as a supply for those times when we don't have water for those times of the year or four years.

Heather Cooley (00:36:27):

And so we're increasingly seeing investments in ways to capture that water, to slow it down, infiltrated into the groundwater as one example, and then pump it out, treat it and, and use it again. We did some estimate, and, and so it's looking at really at rainwater that's happening on sort of these hard surfaces in urban areas. So what's happening on roads, on rooftops, that's, that's what we mean by urban health. It's trying to capture some of that in the region. In fact Los Angeles is making some pretty significant investments in stormwater capture. There was a parcel tax that passed a number of years ago, measure W and now the city and the county looking at ways to take that water and, and address water quality issues and flood risk issues, but also to, to start to recharge ground water through those projects, they are not only helping to augment supply, they're creating parks in neighborhoods that have not had them improving water quality. There are many sort of co-benefits that we've identified in our research a lot of opportunity to be augmenting supply through stormwater capture particularly in our coastal areas where a lot of that is just <inaudible> in

Yousef Baig (00:37:39):

Protection. Yeah. Gray, I know you've mentioned kind of the cost estimates of desalination and kind, kind of how stormwater capture can be a much more cost-effective alternative. What, what do you think is, is holding the solution back to being adopted more widely around the state?

Gregory Pierce (00:37:55):

Yeah, I think there's a number of factors. One again, is like Heather. We basically designed our cities get storm water out them as quickly as possible for the longest time. So it's difficult with all the services we have to capture storm water. But the second is that we have to first with storm water we still have to be concerned about flooding, especially with more extreme precipitation height. Then the whole regulatory structure for storm water is all about water quality. And cities basically have an unfunded mandate to comply with those requirements. Because of proposition two 18 here, it's, it's hard to set up a stormwater utility so they, they don't have much money to do the work. So that's where it comes in. You need basically folks like hes Valley County to pass tax on themselves, <laugh> to put enough money into

a system that can actually invest in more stormwater capture, then just the bare minimum to not be out of compliance with very wonky permits.

Gregory Pierce (00:38:57):

So I'd also say actually, and I dunno Heather agree on this, in some ways, I think storm water, its ability to increase water supply is being hampered or the, the, the, the waters are becoming muddy because people want so much from stormwater now. So multi benefits part of stormwater is definitely true. Stormwater projects can bring multiple benefits, but not every single project can address water quality, increase water supply, increase greening, be a park, help with cooling, have native habitat, and that's some of the rhetoric that gets thrown out. And I think we just need to be clear about what our goals are and measure them. And otherwise it's just frustration, I feel like from everyone, even in the context of LA's program. But if we really wanna focus on water supply, let's have metrics around water supply and acknowledge that in some cases we can't also have a park in particular area. But I think we need to do a better job. Again saying there's multiple benefits, but saying there's trade offs in particular projects and being honest of that.

Yousef Baig (00:39:58):

Right. Yeah, because there were so many people in like the political context here, just lamenting how much water was lost to the ocean, right? It was this thing we heard constantly how far there are also environmental benefits. Yes.

Alvar Escriva-Bou (00:40:10):

Yeah, of course. I mean, we were talking here about urban, you know, we usually differentiate between stormwater capturing urban environments in cities. And then we talk about groundwater recharge in, in ag environments. Groundwater recharge can have a lot of, of, you know, stormwater capture can have environmental benefits, groundwater recharge can have a lot of environmental benefits. There's some places in the state where they're combining groundwater recharge basins with, you know, we have the Pacific Flyway, we have a lot of birds coming through California. And so if you have a, a groundwater recharge basin, you can actually combine these benefits. And actually just bringing up to the previous conversation, I would bring also that the groundwater recharge is the biggest hope for, especially for California farms. It's, it's the most affordable or one of the most affordable supply options. As I was saying earlier, you can actually use your own irrigation ditches, canals and all that to, you know, to bring the water in wi during winter times.

Alvar Escriva-Bou (00:41:10):

And as we have seen that there's a lot of water that could be actually put into, into the aquifers helping a lot with supply options. Actually, this year was so wet that a lot of effort, even though we did a lot of efforts, there was a lot of wire that couldn't be captured because everything was wet. And actually, I was talking to someone from Metropolitan this week, and they had half a million acre feet. They, they couldn't put anywhere. And one thing that we have to explore more, and that's, I think that it's being starting, you know, a lot of conversations, partnerships between, you know, across agencies, agencies here in Southern California and the Central Valley that can have you know, we have the statewide project that connect the, the San Joaquin Valley and Southern California. So parking the wire there, but there's still a lot of limitations on where you can actually move the wire out of the state water state water project contractors. Also there's infrastructure limitations and there's also regulatory constraints. This year we have this executive order thing was April, I think, I don't remember exactly, but before that,

it's really difficult to get a permit to put ground groundwater recharge. And same for, for urban. You know, there's a lot of environmental issues that you have to take care of because we have to take care of these issues. But trying to streamline as possible, all these ground water recharge permits is really important for the state. Yeah. So we're, we're

Gregory Pierce (00:42:36):

Getting close

Alvar Escriva-Bou (00:42:36):

To the, the question part,

Gregory Pierce (00:42:37):

And there

Alvar Escriva-Bou (00:42:38):

Is a question that someone actually asked about you know, the governor supports streamlining

Gregory Pierce (00:42:42):

The

Alvar Escriva-Bou (00:42:43):

Permitting for these kind of climate resilient projects. Is that something that you guys support for

Alvar Escriva-Bou (00:42:49):

Groundwater

Gregory Pierce (00:42:50):

Recharge

Alvar Escriva-Bou (00:42:50):

Projects and, and other climate resilient projects? Like, is that just kind of a foregone conclusion in terms of that's something we need to do? Or is there

Gregory Pierce (00:42:57):

Kind

Alvar Escriva-Bou (00:42:57):

Of a trade off there that needs to be considered? Heather, do you wanna start with that one started

Heather Cooley (00:43:03):

And, and a perspective on this? I mean, I think there is a, a challenge sometimes streamlining is sort of code for not considering all of the impacts. Yeah. In particularly for the environment. So, you know, it does give me pause when I, when I hear that at times, yes, I think there are ways we can do things better and more efficiently, but it, it's often code for let's just fast track projects. And sometimes it ends

up with bad projects, bad projects that would've been rejected had we gone through. I, I do think, you know, part of our challenge is haven't been planning and doing enough. I mean, I think groundwater recharged great example where we're defining <inaudible>. We should have been doing this for decades in terms of identifying what are the best areas for recharge, how do we have to get infrastructure to get it there, site infrastructure. We haven't done that level planning yet, and I think that's gonna be critical rather than streamlined. Whoever can get it in the fastest is the fastest not gonna get.

Alvar Escriva-Bou (00:44:07):

Yeah. Greg, I saw you furrowing your brow a little bit. Is, is your sentiment similar to that?

Gregory Pierce (00:44:13):

Yeah, I mean, I don't know what climate proposals talking about, because that's research, so I'd have to go case by case. I would say, I mean, I agree with what Heather's saying completely, but I would also say we're too slow at building water projects once we've approved them. We're too slow at deciding certain projects, including these projects. I, I just, there's so much time and money wasted in 20 year debates. We gotta get a little faster at least deciding, I'm not saying approving, but deciding on these projects. And I know that's a common theme with housing too. That being said, I think all the agencies say they're working on it, so it's clear how to move forward. The governor's trying to push it, but ultimately it, it's implemented at the agency level and there seems to be common frustration and theme there. And we have to thread the needle between not overriding necessary regulations and caution and process, but also speeding things up. It particularly applies to, you know, drinking water projects to small rural communities where everyone agrees we should balance this new treatment plan and it takes 10 years, so it's unacceptable, wet, have clean water, right?

Gregory Pierce (00:45:23):

In many other places, certainly with housing as well. Yeah.

Yousef Baig (00:45:26):

This was also an interesting question too, from the audience. So they're talking about transitioning from farming. Is there any example of a, a region in the US where we've maybe government or society at large has like successfully over

Alvar Escriva-Bou (00:45:42):

Relied

Yousef Baig (00:45:42):

On extraction? They were able to move to a new form of success and, and that's their wording, not mine.

Alvar Escriva-Bou (00:45:49):

This is a really good question because I don't think that there are many success stories. And actually there are some really bad stories in the past. Actually we are, right. I'm, I'm working with someone on, on working on transitions and looking a little bit at the torical perspective in the us. And we are, you know, try to put in this in context. This is not the first thing that happens to humanity. We haven't seen this in many sectors like coal mining, like other, other kind of issues. Our economy moves and

transforms and we have to adapt. And the bad thing is when we don't manage this transition. So what we are saying now is we have 20 years to actually plan for a managed transition and to do something that makes sense for everyone and don't, don't don't, doesn't cause big troubles for small communities, for, you know, for vulnerable people and also for farmers that are actually helping the economy of California.

Alvar Escriva-Bou (00:46:45):

So I don't have on top of my mind really good examples, but what I've seen, you know, two, two weeks ago, I was in Fresno in a conference and we had a lot of meetings with people and you know, I'm constantly working with a lot of the farmer, the farmer community. There's a lot of momentum, energy, and things are, you know, the, the mindset has changed a lot in five, six years. Five, six years ago, nobody thought about regulating our water going down in, in water use. And now there's following programs, there's multi-benefit programs in, in the state's actually getting some money out to, to start triggering that. And actually the farmers, the Asian districts, the communities are working together

Yousef Baig (00:47:29):

Through this transformation. So I think that we could be a good case case, you know, pilot case for, for other cases in the future. Yeah. Heather, Greg, have you guys seen any, or are there any examples, maybe not necessarily in the US where they've been able to kind of do a transition like this?

Gregory Pierce (00:47:47):

I not <laugh>,

Heather Cooley (00:47:50):

I, I guess, you know, I we're supposed to be the positive panel <laugh>. No, I mean, I see a lot of successes happening around the state, frankly in terms of with respect to water. I mean, we talked about the fact that we've continue to grow in the state and are using less water. That's enough. Absolutely the fact that, you know we have far more recycled water than we're used to. It's not enough. We need more. But, but you know, if you look at, you know, orange County is a great example where they have been expanding their recycled water using it or treating it for those that may not know they're, they're treating it to a very high quality, putting it underground and then pumping it out again, treating it again, and then, then using it for drinking water for all those

Gregory Pierce (00:48:37):

Purposes. So

Heather Cooley (00:48:38):

I think there are a lot of good things happening and, and really our challenge is to celebrate them to do home. There are absolutely agricultural communities that have been able, as you noted, been able to produce higher yields with less water. So, you know, I I, I do think there are lots of successes and things to build on. And, and, and we are in this transition, we are see where we need to go. A lot of institutions it's not gonna be easy, but there's a lot of innovation elsewhere.

Gregory Pierce (00:49:11):

So I think, yeah, we're just about positive things. I wanna mention, I think most positive in California in space the last few years, we're making these investments in water recycling, including San Diego. San Diego Seems to, there seems to be the most disagreement about certain aspects of that project, but Orange County has done it forever. LA is making three to four massive investments in recycling that will really change the supply equation and other similar investments being paid not quite the same scale. I think we need to do more, but I'm, that we, the narrative water recycling is somehow not safe because it's been proven to be safe and we're moving the walk direct vertical recycling, which will cut out a step and allows be efficient in space. So I'm really excited for that. We need to see more, but that's a huge development. That's it. That's positive.

Yousef Baig (00:50:14):

Yeah, I mean, if, if the audience doesn't mind if I squeeze one more question that's not from the audience and I, I do wanna spend a second talking about recycling. 'cause You know, toilet to tap is a term that kind of, sort of orally de describes what that is. But you know, when we're talking about wastewater recycling and the role that can play in both the urban environment and in agriculture it, it seems like it's starting to, like desalination has very quickly come into the consciousness in a way that people are really paying attention to. Greg, you were alluding to a couple different efforts in LA and the Bay. Would you mind just kind of quickly detailing those and sort of what is happening in those two areas

Gregory Pierce (00:50:52):

In LA specific?

Yousef Baig (00:50:53):

Yeah. And, and the Bay.

Gregory Pierce (00:50:55):

I'm not sure I could name the Bay.

Yousef Baig (00:50:57):

Just just the la

Gregory Pierce (00:50:59):

La Yeah. Los Angeles Department of Water and Power with Served the city of LA is investing in operation Next at its treatment plant at Hyperion on the coast. And then Metropolitan Water District is partnering with a few other entities and its pure Water Recycling Project outta Carson. And then at no least including with the LA Sanitation District. And then Las Virgins Water District, which is kind of up in the hills in what delay near Malibu is, is running its own project. I expect to see more, and we do need to see more coordination around those projects between the agencies, but I believe collectively the estimated investment there is $20 billion. And again, it's really gonna change the region's liability and, and, and existing reliance on imported water and positive for the region.

Heather Cooley (00:51:54):

Yeah, and I'll, I'll just add too, on one of the southern California, one of the metropolitan projects they are at least as of now, partnering with Arizona and Nevada on that project, which is another really

interesting innovation, right? So I'll just quickly get, get into it. Obviously those three entities all rely on water from the Colorado River, and so Arizona and and Nevada are interested in investing in Calif in a project in California and reduce Mets reliance on Colorado and free up that. So another, you know, in addition to of course, it being recycled water and all the innovation there, there's a partnership innovation and something we can be thinking about in Northern Southern California or in urban ag. Just, just kind of breaking down, I guess some, those silos that we had in the Bay Area, like, and I'm assuming in San Francisco Bay area.

Heather Cooley (00:52:49):

Yes, <laugh> you know, I, they haven't been doing this much frankly in recycled water, only recycling about 5% of their wastewater there. I though that is gonna be changing and part the driver there or at least the initial driver for that is because of concerns about nutrients in San Francisco Bay area. We had a terrible last year that went to a really massive fish. Now you lots of different factors around the cause of that. Certainly wastewater wastewaters is contributing quite so that's likely to be the more urgent driver, although ly the in supply and helps us <inaudible> and California, the Bay area too much it's a surprise is reliant on import water from the, from the Sierras. I know we don't talk about it that much. We like to point finger in southern California bay areas as well. And so that recycled water, again, driven by water quality concerns, supplies that need less to get, which is also <inaudible>.

Yousef Baig (00:53:55):

Yeah. And another interesting question here too. So a, a byproduct of byproduct of conservation is lower sales and thus loss revenue. Where does the loss revenue come from to cover the fixed costs of water treatment and delivery to the consumer?

Heather Cooley (00:54:12):

Yeah, lemme jump in on that. You really <laugh>. I, you know, I think, and this was talked about earlier of this sort of new business model and I, and I think we have to recognize lost revenue is also safe cost savings for customers <laugh> there as well. And I think we need to, you know, recognize that utilities are, are serving the community and thinking about it from larger perspective. When we look, and there've been a number of studies when we look at efficiency by investing in efficiency, we're avoiding the need to develop more expensive new supplies. So there is a cost savings there for the community. And in fact, a study that was done looking at Los Angeles particular within 16 year period they saved the equivalent of $11 billion in new water treatment infrastructure through their wow. Similar savings on wastewater. That's a huge cost savings of them passed their customer bills to 25%.

Heather Cooley (00:55:16):

So, you know, I, I do think there we need to do a better job of planning and forecasting so that util aren't getting, investing in new supply that they then is there. And I think that's a, a better solution. Another I think challenge with efficiency and one of the reasons we haven't seen the investment in it that we have saying in other infrastructure is that, you know, for other forms of infrastructure, recycled water, even desalination, where we're debt financing, taking out bonds today for that, that enables us to help cover those high costs even. And while those infrastructure benefits for long time much we have not been paying for efficiency in that. And so in order for us to really scale, and I think that reduce the conversations.

Yousef Baig (00:56:16):

Yeah. Var Yeah, I wanted to add a little bit. I totally agree with what was mentioning. You know, especially with

Alvar Escriva-Bou (00:56:23):

The, the pardon, if you have to expense supplies that that, and, you know, you have always to consider all the alternatives and there's options, there's nuances also. There's places, for example, conservation in San Francisco is much more expensive than conservation here in San Francisco, there's not a lot of outdoor use, just central cost. They reduced. Central cost is doing now like 50 gallons per capita per day, or 60 gallons per capita per day in some places. So conservation there is expensive. It's that what we have to consider all the options if you have other supplies, then getting back to the first kind started with the conversation in the, in the beginning that we had this week a hearing. So then we get into the problem of it's, it's that the right thing to do for all the agencies in the state. So do we have to do that?

Alvar Escriva-Bou (00:57:11):

And there's places where they don't need new supplies. So they have their base. We want these agencies to save water, maybe yes. What are we gonna do with this water? Are we, are we gonna send it to other place? You know, it's, we have all to think all all options that are on the table. Yeah. And I, yeah. And finally I wanted to add one more thing, and you know, there's always no answers in everything. And we have to think about this carefully. What do we do with the water that we save if we are go, if we are doing conservation and we are adding population, we are actually increasing the vulnerability of our city. So if you, you know, you understand how things go, you take alarms out and they'll put, then you put this water into new housing. When you have a drought, you won't be able to reduce water and the, you know, from out use and people have to reduce water from in use, which is much more expensive and problematic for people just saying that.

Alvar Escriva-Bou (00:58:11):

Have to be careful also what we do with the conservation water. We have to be, you know, w we have to have a plan in five, 10 years. What, what are we gonna do with that? And try to also think about the increasing viability that we have year to year with climate change. So what, what we, you know, what urban agencies are as to do, and they are doing well in, in my opinion, is to develop plan for 4, 4, 5, 6 year drought. And what are they gonna do in each of these years when they don't have enough water. So I think that this planning for supply and demand at the same time, and the viability we have over, over these years is the most important thing that you, you need to do on, on urban issues.

Yousef Baig (00:58:54):

So before we go, I just wanna ask you guys sort of one question. Imagine this perfect scenario where you have a blank check majorities in both houses of the state legislature and a governor ready to sign whatever idea you want to put forward. I'd, I'd love to hear just from each of you, like, what would that idea be? Greg, maybe start with you.

Heather Cooley (00:59:17):

Well, thank you for that question, <laugh>.

Gregory Pierce (00:59:21):

I, I haven't thought

Heather Cooley (00:59:23):

Too much about

Gregory Pierce (00:59:25):

That exact question because that's very far from my daily reality <laugh>. I don't know. I, I think, I guess maybe I would think about others in big dollars, really big dollars into conservation. Again, I, I would be comfortable with the statewide ban on, on functional term, but then putting in dollars into conservation, particularly for low income owners to transition their lawns to

Heather Cooley (00:59:55):

Native

Gregory Pierce (00:59:56):

Landscaping. But yeah, big dollars into conservation outdoor use as Albert was saying, is really the problem. That would be one thing. I suppose another thing, and it's something I wanna mention when Albert was talking about it, like the trillion dollar question in California feels like to me, where do we build new affordable housing that has enough water, enough, isn't prone to fires a really big problem in intersecting those three things? So somehow there's a lot of money that could go toward that. That might actually be a better answer for me. Yeah.

Alvar Escriva-Bou (01:00:28):

Heather, what about you?

Heather Cooley (01:00:30):

Yeah, I mean, I do think I, I think obviously efficiency is a high priority and I think I would sort of couple that, as Greg noted with support for low income households, those who haven't really been able to sort of participate in, in utility programs and with sort of widespread support for water affordability for, for those households and communities that can't afford base water service. Yeah.

Alvar Escriva-Bou (01:01:02):

Yeah. Alpar, I was actually going to go in, in similar direction and we haven't talked, we haven't talked No. In, in Heather's last point. We haven't talked much today, but I think if I had this option, I would ask to ensure that every California has access to safe and clean water, and there's many people that don't have access. Yeah. And there's, especially in the Central Valley, especially in agricultural regions. So we have small communities that have really, you know systems that in really bad conditions, and when we have droughts, they lose access to water. And actually there's, there've been studies out there that this is not an expensive thing. I mean, it's not like as expensive as many other things that we talk about. Yeah. So we, you know, we are one of the, you know richest places in the world and we shouldn't allow that to happen. Yeah. I feel like that's a great place to end it. Can I get a round of applause for <inaudible>? Yeah.

Gregory Pierce (01:02:06):

And for <inaudible>, who did an excellent job. A round of applause as well. We have 15 minutes till our next session and we look forward to seeing you there. Thank you.