TWV Podcast #047
The Ups and Downs of Environmental Finance with Jeff Hughes
Show Notes at http://thewatervalues.com/pod47

Intro: Welcome to The Water Values Podcast. This is the podcast dedicated to water utilities, resources, treatment, reuse, and all things water. Now here's your host, Dave McGimpsey.

Dave: Hello and welcome to another session of The Water Values Podcast! As my son, Joey, said, I'm Dave McGimpsey. Thanks for joining me.

Hope everyone's doing great – really appreciate all the new listeners – we had a huge spike in downloads last week across the entire catalog of The Water Values Podcast. That means you're spreading the word, and I'm very grateful to you for that. Thank you, thank you, and thank you for that.

Today's show is fantastic. Jeff Hughes of the Environmental Finance Center of the University of North Carolina joins us to discuss a broad range of rate and rate design issues in the water-wastewater sector. He's got some great examples of creative rates and rate designs that are being deployed or considered across the U.S. I found our conversation absolutely fascinating, and I'm sure you will, too.

With that said, let's get on with it. Open the valves, fasten your seatbelts and here we go.

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Dave: Well, Jeff, welcome to The Water Values Podcast. Thanks so much for coming on. Really appreciate your time. To start off, could you please tell us a little bit about your background and how you got interested in water?

Jeff: Sure. I'd love to. Most of my career I've worked with or for local government agencies, some water utilities but also some other environmental service providers. I was a small a county public works director for a while and had a water utility under my purview, as well as things like solid waste and other aspects of environmental services. So I've just always been intrigued by how government agencies provide those services. I've worked some as a consultant and then obviously currently work in the academic arena but still focused on that area.

Dave: Sure. And can you tell us what you're doing in that academic arena?

Jeff: Sure. And I say academic arena, but it actual is a very applied academic arena. I work at a place called the University of North Carolina School of Government which is really a cooperative extension for public officials. We do what academics do. We do research and teaching and advising. It's just I work primarily with students that are public officials rather than academic students. I do have quite a few Masters and Ph.D. students that work with me on research projects. I occasionally teach courses in our Public Administration Department.

Most of what I do is probably more similar to a consulting firm. We are on call to answer questions that people have related to what's legal in the environmental finance world. What are best practices? A lot of our research involves documenting best practices so we do a number of statewide pricing studies where somebody will call us, and we produce tools that will show what the standards are in a particular state. So that's really the academic world I sit in. If you're familiar with the academic world that focuses on things like peer-reviewed papers and just research seminars and that sort of thing, that's not me. That's not what I do.

Dave: You used the term environmental finance. Could you describe what environmental finance is?

Jeff: Sure. It's a hard thing to explain, particularly to my family members. When I'm trying to explain what I do. I think, seriously, there's a number of definitions. Particularly when talking in the academic world, I think environmental finance in the academic world can really be synonymous with environmental economics and can include a lot of non-monetary analysis where you might be trying to figure out the societal benefits of a particular environmental service. There's things called ecosystem services out there that a lot of people who say they're environmental finance professionals focus on these days. They're trying to kind of figure out economic value of different aspects of environmental protection.

That's not how we define environmental finance from my center. I work at the Environmental Finance Center. It's really, for us, the environmental "how do you pay for it" center. We are very cash and finance focused. And that's how we define environmental finance. We focus on tracking the flow of funds directly linked to providing an environmental service. And that's again, it's water service, but it's also land conservation. It could be recycling. It could be any kind of environmental objective that you think of.

We track and figure out systems for taking the money from the ultimate beneficiary all the way through, potentially, the contractor that the service provider might hire to actually build something. So we look at a lot of fee systems. We do a lot of pricing work. We also look at a lot of debt models. So we look at alternative capital finance options. A lot of our work, while it's finance oriented, it has a blend of legal governance on top, probably even more so than economics. So we're very concerned about what you can legally do in a particular setting, not just what you ideally could do from an economic standpoint. Hopefully that makes sense.

Dave: I think so. So when your "clients" are coming to you, these governmental entities that are trying to figure out ways to pay for a certain project, what are some of the issues you're seeing that they are bringing to you?

Jeff: Well, I think it's the issues that everybody in the field comes across. First off, they want to have sufficient funds for their service. So there's a lot of environmental service providers,

water-wastewater utilities that are looking at very high price tags and their main concern is how can we find the one million, the five million, the hundred million dollars that they need. So just finding the money is a big issue. But then it gets a little bit more complicated for many when they're trying to figure out how they find the money when a segment of their service population has different financial challenges than a different segment. And that usually is synonymous with affordability problems. So we do a lot of work trying to figure out pricing systems and finance systems that take into consideration that we have a country that has some wealthy families and some poor families. So that's one thing that we look at.

We are also focused on some economic issues, and we know that how you generate money to pay for things does influence people's behavior. So there's a behavioral side of what we do that comes up in a lot of our work. We may come up with a way of paying for something that satisfies one criteria. It might generate lots of revenue in a stable way, but it may send a signal that the service provider doesn't necessarily want to send. Particularly in water where we might someone trying to send a conservation message. You might come up with a payment structure that is great at generating money, but maybe not great at generating water efficiency or conservation signal.

So those are the aspects we deal with. I mentioned we also deal with "is it legal?" There are a lot of great ideas that people are chewing on for creative environmental finance that may be legal in one state but don't necessarily work in another state. So we pride ourselves on really being pragmatic in our work, and we take lots of great ideas and have to adapt them to make them work just for practical and legal methods.

Dave: So, let's start off with traditional rate design. What do you view as the state of traditional rate design?

Jeff: Well, I think when you're talking about water-wastewater and that's really what I think we're going to focus mostly on, traditional rate design I think is dominated by, ever since we got into metering water, has been dominated with volume based pricing. And in most cases, it's volume based pricing for both water and wastewater utilities. Wastewater revenue is typically linked to the amount of water sold. Sometimes there're formulas that reduce it, but it's really, at the end of the day, volume based. I would say anywhere from traditional across-the-board 70-90% of a revenue that a water utility in this country collects, you can link to the amount of water that passes through a meter. That's the traditional rate design I think in the big sense.

Dave: Ok. And so as you're looking for creative approaches to move away from that traditional rate design, so that some of these creative approaches could send the right signal so to speak, what do you see as the opportunities to move away from the traditional rate design?

Jeff: Well, I think, it's not rocket science in the sense that what we're really looking at is to make the revenue less variable and more fixed. The cost structure for these utilities is exactly opposite their pricing structure. By that I mean, if you look at the cost of most utilities, 70-80% of their costs are fixed. They don't change regardless of how much water they sell on the short and medium term. So a lot of our alternative rates are just to look at how we can produce, on an annual basis, or on a monthly basis, a revenue stream that is more predictable and more fixed for a particular utility.

The creativity comes with can we do that in a way that still sends some type of pricing signal. We're not trying to come up with the gym membership pricing structure for water utilities. You know gyms, nobody really pays variable prices for their gym memberships. They collect fifty bucks a month from everyone whether they use it once or thirty times. So one alternative rate design could be that we just tell utilities just charge everybody fifty bucks and go home for the day. But that's not what we're doing because people lose sight of any connection between their water use and the payment structure. So all of our rate designs have some pricing signal built in. They just produce more reliable revenue streams.

Dave: Ok. So when you're looking at these alternative rate designs and things of that nature, what's the framework? What do the utilities you're consulting for, what are some of the goals that they're trying to implement in terms of using alternative rate designs?

Jeff: Well, many of them are very concerned about pricing signals. Particularly, we've done some work in Texas and California and the Southeast where we're based, we had the drought of record in 2008 and nobody just wanted to send their customers a message that it didn't matter how much you used, you'd pay the same. So everybody wanted to have some connection with how much you use influences how much you pay. So that's the starting point for many utilities.

Frankly, there are a few utilities that don't care so much about that. There are some utilities that have so much excess capacity. They would be happy having that fifty dollar flat charge for all their customers. But we are doing most of the work for those utilities that tell us can we make a compelling case to our customers that they should be conscious of their water use. So the way we've done that is that we look at can we use consumption as a factor for impacting the amount that someone pays but not necessarily on month-to-month or day-to-day basis. So that's where most of our alternative rate designs have fallen, and we have a couple of designs that meet that criterion.

I think the one that we've been interested in and has gotten the most positive feedback from the utilities we work with is something that we refer to as "PeakSet Base." where what we're doing is using historic consumption for a particular utility going back two to three years and looking at each individual customer as an individual cost driver on the system. And what we know for water systems is that customers that use a lot of water for short periods of time tend to drive a lot

of a utility cost over the long term. So what we've done is have a formula for at the beginning of the year, we will allocate a base charge to every customer in a particular utility service area, and they will pay that same base charge all year long.

The creativity is that everybody gets their own separate base charge based on their historic peak. So if someone has been using tons of water in the summer, they're going to pay a pretty stable amount for water all year, but it's going to be quite high. Somebody that has used very little water in the summer relative to the winter and they're really an ideal customer from a utility cost standpoint. They don't have that messy peaking. They're going to be rewarded with a pretty low base charge.

So at the end of the day, you could design it so a utility could, at the beginning of the year, know that they are going to collect 70% or 80% of their revenue if everybody went on vacation for the entire year. They're still going to collect 70 or 80% of their revenue in fixed base charges, but each individual customer knows that their behavior is going to influence their future base charges. So you do have some tension when somebody is turning on the tap, particularly in the summer, but you don't have the month-to-month spikes that we see with just a pure variable base pricing.

That's the one that we've tested for about fifteen utilities. Nobody has actually implemented that we've found so far. Davis, California came pretty close in a rate structure that they refer to as a "consumption-based fixed charge." We didn't work directly with them, but our system that we've been promoting is very similar to what they promoted. It was very controversial, but it was essentially that same structure.

Dave: What drove the controversy in that situation?

Jeff: The thing that drives so much controversy in anything in environmental finance is that inertia. Whenever you change something, it's the devil that you know is better than the devil that you don't. We can show these systems and this is what we do for our analysis is that we will show that for 80% of your customers there's going to be very little change and maybe a positive change.

But you can't do much creative without having some winners and some losers. And in Davis, the losers of that system were not particularly happy and the losers under the Davis analytics were going to be people that, as you can imagine, did a lot of irrigating in the summer. If you Google Davis pricing, you'll see they generated the so called "losers" from this scenario, they didn't refer to themselves as losers, but they generated this ground-roots uprising, and they had their own advocacy organization. They were fighting on a platform of fairness. They were saying that there was going to be prejudice against their water use. I mean that's the campaign. Now there's a lot of other complications in California water pricing, it is so fascinating. There are some

constitutional issues that they were looking at. But at the end of the day, it's, I think, a fairly vocal minority really got angry that they were going to end up paying more. And I think that's what did it.

In the utilities that we've worked with, it's interesting. There's been some concern for that vocal minority but when we've done our analysis and showed that just how many people are going to be at the end of the year, held fairly constant in what they pay, then their concern moves away from that fairness and the first thing that comes up when everyone's talking about this alternative rate structure is can our poor billing software handle it? That always comes up.

Dave: Yeah. So I think there's a couple things in there. Number one, I think you're right when the "losers" are the ones who have deep pockets and then you're more likely to have opposition. So I think that's a big thing. The other, you just mentioned at the tail end there, data. In the utilities I've been involved with, getting good data seems to be quite an issue at times. And so I'm curious what kind of data issues there are for these utilities that are looking at alternative rate designs. How much planning needs to go in if they want to implement an alternative rate design do they need to get two years' worth of data and get their house in order before they really dig into this? What are the data issues?

Jeff: I think it's a great question. I mean certainly we would tell anybody to not go into something as important as the revenue you're going to get and your fundamental customer communication mechanism, which is what I think pricing is. We tell folks to look very carefully at their data. You don't necessarily need two years of data. That one system that we did we were going back for two years, but there are some other approaches that you could have a little bit less data needs. But I don't want to downplay the data concerns at all. It is something that, particularly for a small utility, it can be a challenge for this type of alternative rate.

At the same time, everybody's talking about big data. Everybody's talking about smart-meters. I have to say it gets me a little frustrated when I see the type of investments going on for smart-meters for some utilities, and we're not necessarily seeing smart pricing that's following along the smart-meters. I mean the whole point of a lot of these meters is to provide better data. I think some of the utilities we've been working with are getting there. I mean they're having data sets now that they didn't have three of four years ago. I think as we move forward I think there will be some utilities that are starting to realize, "wow we have all this data, now we can start doing this type of more advanced pricing." So it is something that we are tracking.

The billing software is a related data issue, but it can be its own challenge just because some water utilities have these legacy billing software systems that basically what we're talking about is a customized, individualized billing class for every customer. And there are just some rate structures that, excuse me, there are some billing softwares that have a hard time with that. Again, that's another thing that we are trying to work with some billing software companies to

get their billing platforms to be as much about management as just an accounts payable system. So we're getting there.

I will say that I get a little frustrated when people tell me "Oh we could never do that, that is so complicated." And then we turn around and find out, particularly in areas of the Southwest, they are already doing very creative pricing on the wastewater side. There are large swaths of utilities across the Southwest that use historic water consumption to set wastewater pricing into the future. And it's a little bit complicated but we know that billing software can be programmed to look back and use that information for forward-setting pricing and it's being done today for many, many utilities. So when people tell me "Oh we could never do that," I can show you a list of hundreds of utilities that have figured out how to do a basic variation of what we're talking about.

Dave: Well, that's pretty interesting. Now, in terms of those utilities you mentioned in the Southwest, are they combined water-wastewater utilities or which ones are the ones being creative. Are they the ones that are taking a more holistic approach or are they the separated ones?

Jeff: Well, whether you say it's creative or not, they're being more complicated in their price setting in the Southwest, particularly if you look at a place like Texas. There is so much peaking in the summer. You have water customers that, combined water and sewer customers, where they may use thirty thousand gallons a month in July and eight thousand gallons a month in December. And I think it's part of a rebellion on customers that were getting frustrated that they were paying for thirty thousand gallons of wastewater service in the summer when they showed, come on guys, there's no way we use thirty thousand gallons of wastewater service in the summer. All of that extra water is just going to water our yards.

So what utilities had to do in places like Texas where they are concerned about, you could say they're concerned about a fairness issue with wastewater pricing is they have had their winter use on the water side to displace water use in the summer for wastewater billing purposes. So they will look back into, in some cases they are complicated. They take the three lowest months in the winter and have their billing software calculate what that is and then in the summer when a customer uses thirty thousand gallons, they will use the thirty thousand gallons for their water pricing, but they will reach back in time and use eight thousand gallons as the wastewater price-point.

So it's really very similar to what we're talking about in our creative pricing. So we know that the software, some of the software, can be programmed to do that. Again, talking about detailed pricing over a podcast is kind of challenging so I'm not sure, I like to, in my work, use a lot of diagrams and graphics so, Dave, I honestly don't know if that's clear but hopefully, that's the best I can do.

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Dave: I was getting it there. We've talked about some of the challenges to adoption, you know, opposition from the losers, billing software issues. Are there any other challenges to adoption of these creative and alternative rate designs?

Jeff: Well, legal options are a big thing. There is a philosophy that has driven rate setting in this country for many years, and it's the idea of cost of service. So the idea is you have to have a nexus with what someone pays over a particular time period, and you can certainly think of creative alternative pricing design that do all sorts of interesting things on the policy side of the house, but they may lose that cost connection. So we're always worried about that. Particularly in states like California that have very strong prohibitions against just willy-nilly pricing. I mean, you really do have to have pretty strong link between costs and your price.

So we end up doing some detailed legal analysis when we do these pricing. I mentioned affordability. Some of the alternative pricing structures, the group that they may hit harder may be the lower income, and we're very aware of that. So a lot of our analysis when we do an alternative pricing analysis will be to kind of say "Here is the impact on these different levels on these different types of customers".

The other thing we haven't mentioned is the economic development aspect of water. Again, in many areas, water is a key part of a community's economic development strategy so we're aware that you can't have alternative price that suddenly sends the main industry in town that might already be on precarious footing, you can't do an alternative rate setting that suddenly triples their out-of-pocket water pricing even if you have some other compelling reasons for it. It's just impractical sense for small town America. That doesn't work.

Dave: Sure. In terms of the Utility Regulatory Commission angle, have you been interfacing with NARUC at all?

Jeff: A little. We're pretty deep into the podcast, and I haven't even used the work decoupling which is really what we're talking about, what we've been talking about for the last twenty minutes is decoupling. And that certainly is a big issue for NARUC. It's a big issue for utility commissions and public service commissions across the country. It's really what we're talking about. It's just kind of decoupling. Decoupling is just a version of what we've been talking about. It's weakening the link between usage and revenue.

And there are some interesting decoupling mechanisms that NARUC has been looking at and that utility commissions have been looking at that are a little different than what we're talking about. I think you could say it's an alternative rate design is that rather than doing what we've talked about is there's "let's see what happens over a year period or over a six-month period." And if water use is much lower than what was predicted, let's have a correction period. And let's

send out bills for the following year of the following month that are collecting some of the revenue that we had planned to get in the previous year.

Again, this is a somewhat complicated pricing concept. That seems to be what a fair amount of investor-owned utilities have kind of been pushing their utility commissions to allow them to do. We've had some push back even from the utilities, the private utilities themselves, that their customers haven't reacted particularly well to that rate design. Getting a little memo or kind of thing in the mail that says you're going to be paying a surcharge this year because of an under-billing in the last year. It just doesn't have a good public relations ring to it.

So we haven't been talking about some of these new alternative rate structures, but I'd like to. I think forwarding-looking rate setting plays better with the public than this kind of retroactive recovering revenue in lump sums that some of the investor-owned utilities have been experimenting with.

The other model that I think may have some interesting application for investor-owned utilities is what we refer to as a dividend model where, I don't want to say that you intentionally overcharge customers, but I will say that you are very, very conservative with you volumetric projections. So that you make darn sure that in a given year, you are preparing for the worst sales year you might possibly have. What that does to you mathematically is that at the end of the year, rather than finding yourself short, where you have to go back to your customers and recover some funds, what that does for you is you end up with a surplus. Now the only way you could get by with being conservative on your projections year-after-year is getting some of that money back to your customers. I think there's no utility service commission or customer that's going to let you overcharge them year after year.

A lot of the rural electric co-ops use this model and what they do is, come December, they cut their customers a check. To us, that seems like a really natural way of doing pricing is that you're very conservative, and you send your customers a check in December. You'd be surprised what kind of response we've gotten with this approach.

Dave: Surprise me. Go ahead and surprise me.

Jeff: Well, I mean we've done a lot of vetting of all these alternative models. We vetted them with finance officers at the utility level. We've worked a lot with the rating agencies to vet these. We've looked at lenders. The idea of a utility giving money back to a customer is, to be frank and be a little melodramatic, it scares the bejesus of a lot of people. It's back to what we were talking about earlier in the show. There's big needs, and people's main concern is having enough money. So if the money comes in in billing payments over a year period, even if it was planned that you only needed ten million and you were very conservative and you collected eleven million, turning around and giving back that million dollars is just a tough sell when you know

you have a capital improvement plan that has fifty million dollars worth of needs in it. So I mean, I understand and I was utility director, and I understand that there are always needs but this approach is really as much about fairness as kind of changing the relationship between customers and their utility so that they see themselves as owners rather than just some sort of passive customer.

So we continue to kind of do an analysis on that dividend model. We've done some models where rather than giving the money back to people based on how much water they used, we had some really creative formulas where particularly if you're in a drought area, we say "Hey, why don't we be creative and why don't we give money back to people in proportion to how much they conserved?" You need some good meter technology, but you could imagine where the big winners at the end of the year are somebody who worked hard to not peak, to reduce their month-to-month use, to respond to a particular call the utility might have had at a given time of the year.

So again, you can do some creative things that I think still follow a cost of service pricing. If somebody in the middle of the year cut their use drastically, I think that you could show that they had some cost benefits to the utility and you could reward them a little bit more. I am, as you can tell in my voice, I'm particularly excited about the dividend model, but we need to find, you know Washington D.C. tried to find a version of this, certainly not some of the complicated models that we're talking about but they found themselves with a little bit of a revenue surplus in a given year, I think three years ago or two years ago. They cut everybody a check. It was a pretty small check. And there was just a lot of concern that you know, it was a lot of work to get that money back to people and there wasn't necessarily, a feeling that that generated a transformational relationship with customers. Frankly, it probably got some political benefits. So I understand the logistical challenges of some of these designs, and that people were just concerned about the message of giving money back when at the same time, many utilities are just so stressed out that they don't have enough money. These are the things that we are looking at.

Dave: Well, Jeff, this is an absolutely fascinating subject. We could talk for the rest of the day but you have been very generous with your time. You've already spent more time with me than I promised you would. So I want to thank you for that. For those folks who want to find out more about you and the Environmental Finance Center at the University of North Carolina, where can they go to find that information?

Jeff: Well, I think the best source these days is our good old website and that's www.efc.unc.edu.

Dave: Terrific. Jeff, you've been absolutely fantastic. Really appreciate your time again. Thanks very much and we'll talk to you soon.

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Jeff: Sure, Dave. Thank you. Bye-bye.

Dave: Bye.

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Dave: That was my conversation with Jeff Hughes of the Environmental Finance Center at the University of North Carolina – he was absolutely terrific. It's great to speak with someone who's got a lot of experience around the country on rate issues. Sometimes we get so focused on what's going on in our city or state or jurisdiction that conversations like these provide a good amount of perspective.

Here are a couple takeaways. First, thought Jeff did a great job of describing the rate design process as multi-faceted. You've got a strict cost-based perspective and a policy-based perspective. You've got customer comprehension and customer economics issues. You've then got system capability issues, as well. It's a complicated process, and one that customers need to understand better.

My next takeaway concerns the revenue certainty that utilities crave. Jeff indicated that in a typical water utility, 70-90% of the utility's costs are fixed. It doesn't matter how much water is treated and sent out into the distribution system, the costs won't change. This is what I've found to be true in my practice, and customers need to understand this because I can't tell you how many times I've heard customers complain in a rate case that "I'm in a family of two, and we shouldn't pay as much as a family of 5!" Well, that resonates if you don't understand the economics of a water utility, but it simply doesn't make sense.

I really like the PeakSet Base model that Jeff described. That model sets a baseline for water consumption and then bills customers on it for the following year when the baseline is re-set. It gives customers the ability to really conserve water, and if they do so, they get rewarded in the following year with lower rates. I'd like to see this approach, which I understand may be a little data-intensive, combined with the dividend approach Jeff described. That would be interesting.

My final takeaway that I'll share on the podcast concerns the obstacles to adoption of creative rate designs. Jeff mentioned inertia and the devil you know is better than the devil you don't. Another facet of that inertia is what happened in Davis, California, when the "loser" customers of a proposed rate design rattled their sabers and were able to short-circuit adoption of a creative rate design. That highlights a political power issue – in Davis, it was the wealthier customers who irrigated that challenged the new rate design. In essence, the wealthier customers had greater political power and were able to what sounds like maintain a subsidy benefitting their water usage.

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Turn it around and look at the summer wastewater rate issue Jeff mentioned. He suggested that the lowered summer wastewater rates came about because large summertime water users complained that a large percentage of their water use was for irrigation. Because they had political power as a customer that pays a lot of money to the utility, the new rate design was adopted. How did the utility make up for the revenue loss? By spreading the revenue needs over the remaining customer base.

Just goes to show you that for creative rate designs to be adopted, we are going to need to bring together political will, and I emphasize that, cost of service, policy, customer comprehension, customer economics, and billing system capacity issues.

Well, you can check the Show Notes out for this session at http://thewatervalues.com/pod47. Leave a comment on the Show Notes or email me at david@thewatervalues.com. You can also tweet at me @DTM1993, and you can tweet about the podcast using #WaterValues. And don't forget to rate and please review the podcast on iTunes, Stitcher, TuneIn and other podcast directories. And please don't forget to tell your friends and colleagues about the podcast and to sign up for The Water Values Newsletter, which can be done at http://thewatervalues.com.

In closing, please remember to keep the core message of The Water Values Podcast in mind as you go about your daily business. Water is our most valuable resource. So please join me by going out into the world and acting like it.

Outro: You've been listening to The Water Values Podcast. Thank you for spending some of your day with my dad and me.

Dave: Thank you for tuning in to the disclaimer. I'm a lawyer licensed in Colorado and Indiana. And nothing in this podcast should be taken as providing legal advice or as establishing an attorney-client relationship with you or with anyone else. Additionally, nothing in this podcast should be considered a solicitation for professional employment. I'm just a lawyer that finds water issues interesting and that believes greater public education is needed about water issues. And that includes enhancing my own education about water issues because no one knows everything about water.