



**TWV Podcast #068**  
**Speeding Technology Uptake Among Utilities with FATHOM CEO Trevor Hill**

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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.

**Intro:** Hello and welcome to another session of The Water Values Podcast! As Joey said, I'm Dave McGimpsey. Thank.

Before we head into today's interview, please do me a couple favors. First, rate and review the podcast on iTunes or any other podcast directory you use. Second, please subscribe to the podcast. Third, please make sure you take the listener survey at [thewatervalues.com](http://thewatervalues.com) and sign up for the newsletter there, too.

My final announcement before we get to today's interview is to check out Imagine H2O's California Public Policy Challenge. I had a great conversation with Nimesh Modak there, and Imagine H2O is doing some great stuff. The public policy challenge aims to find policy solutions balancing impact and political feasibility. So please check out the site – [imagineh2o.com](http://imagineh2o.com) - and if you have an idea that you think could make a difference in the water policy sphere, submit your idea. There are lots of great ideas out there, as we'll find out in today's interview, but you need to take the next step and submit it. There's a \$25,000 award at stake, too. So get to it.

On to today's interview. Trevor Hill, CEO of FATHOM joins The Water Values Podcast. A great honor to have him on as he's an in-demand speaker and well-known in water circles. Trevor gets into some nitty-gritty technology adoption issues for water utilities. He provides some great insights into why utilities are slow to adopt technology and how he's worked to expedite the technology adoption process. Trevor's knowledge and experience really show through in this episode – so enjoy!

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, Trevor, thanks so much for coming on to The Water Values Podcast. Really appreciate you taking some time this morning to speak with us. To start off, Trevor, could you tell us a little about your background and how you got interested in water?

**Trevor:** Sure. Good morning, David, and thank you for having me on your show. I've been a bit of a funny story, but I started in the water business actually as a Naval Officer. So back in the late 80's I was a Naval Officer and traveled to some very arid parts of the world. And as a marine systems engineering officer on a ship, I was charged with responsibility for water for the



ship's company. And at that time, we were transitioning from technologies that were flash evaporation technologies to reverse osmosis. So, I had both the opportunity and the benefit of being responsible for water in a very dry place, deploying emerging technologies and I think that's what got me thinking about the certainty of future water scarcity. I spent the rest of my career dedicated to water but particularly to eradicating water technology or water scarcity through the adoption of water technology.

**Dave:** So how did you make the leap from being that engineering officer in the Navy to the water sector. What exactly are you doing these days?

**Trevor:** What happened was, so after that, I thought the technologies I was using in the Navy were pretty interesting. In the 90's I built a company focused on water reuse, using membrane technology. I found the sector to be very slow at adopting technology. So my partners and I said to ourselves, "Well, if we own the utilities, we could put in any technologies and maybe go a bit faster. So for the last fifteen years, we've owned utility companies. And through the ownership of those, we were able to look at a lot of technologies and adopt the ones we thought were interesting very quickly. And as a consequence of that, we were in a position where we were not only owning utilities but looking at a lot of technologies, using them in our utilities and started to make some leaps between what was possible and the current status of the market.

**Dave:** Ok. One of the things that I thought was pretty interesting was the slow uptake or the slow adoption of technology and so you actually solved that problem by going out and trying to acquire utilities. Let's look at the reason or the rationale for why technology adoption is slow to uptake in the utility sector. If you could frame the market a little more for us, as well, I think that would really help us understand exactly kind of what the technology adoption issues are in the water industry.

**Trevor:** Well, sure. And I think it's a very important discussion. It's something that most people don't really recognize and often people say, "Why is it that there aren't more interesting technologies or why are utilities slow to adopt technology?" And really I was in the same boat having gone from building interesting projects in the 90's to operating utilities over the last fifteen years and through the formation of our company, FATHOM, this question really sort of haunted me. What was it? And what I started to realize was that and my thesis here really is that the market is massively fragmented in water. And not only that, but it is mainly controlled by municipal interests, cities and municipalities, so you have a situation where there are fifty-six thousand water companies in the U.S. They are largely run by municipalities but they are generally very small, and there hasn't been very much consolidation in our field.

As my partners and I consolidated utilities, we found it to be tricky. And we started to ask ourselves the question of why isn't the more consolidation in water? And I think the reason for this is that water is a local business. It's rate regulated by the jurisdiction of the utility or the state

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in which it's served. But water's heavy and as a function of that, there's not strong drivers to connect Denver and Phoenix together at any one time. In fact, there are strong disadvantages to doing that. And so, as a function of that, every little utility company has generally been in a position where they could either connect to Denver Water or build their own or Phoenix or whatever the situation is.

And so, as a function of the way the nation was created, water companies tend to be very small. And as a function of their size, the ability to adopt interesting technologies at scale is quite challenged. And so, what you find is a very large number of very small utilities adopting technologies at a very slow pace and generally because it's an essential service, our leadership, our risk-averse decision-makers, to the most part and so not only the utilities small but they're run by, in most cases, decision-makers who quite risk-averse. And as a function of that, you have a very sector made up of a very large number of utilities, most of them are very small. In fact, there's only three hundred utilities greater than thirty-thousand connections. The vast majority of utilities are tiny.

**Dave:** Sure. And do you have any insight into why it has been so tricky to consolidate all of, or at least some, of the smaller utilities, and I'm not talking physical consolidation, just consolidation under the umbrella of a larger entity? Is it because many of them are either government or quasi-government owned and so they're not giving up the assets? Is that a big factor? Or what do you see as the, why it has been so tricky to get these utilities under a single umbrella or fewer umbrellas?

**Trevor:** Yeah, I think that is certainly a part of it. In the U.S., most of those utilities are owned by municipalities and so there's a feeling that, in many cases, that water is destiny or water has been used to control development or density. And so cities have been, historically fairly reticent to give up their utilities. Now, in high growth areas or development areas where we acquired utilities, those are largely owned by developers and so there has been more consolidation. If you look at our large utilities like American Water, Aqua America and those companies, those are largely made of consolidating, private and in some cases, public utilities. But in the main, they've only been able to consolidate a relatively small portion of the utilities that are out there. Most of the utilities have this feeling that they want to run those as a municipally-operated utility on behalf of their constituencies.

**Dave:** Sure. And you also mentioned that the lack of scale is a big hindrance for the adoption of technology and technology uptake. What are some of the things we can do to help break down the walls so that scale is not as big of an issue in technology adoption? Are there things we can do to help that along?

**Trevor:** Yeah. So, it's true, the issue in what you find, therefore, it that is a lot of small utilities. And as a function of being smaller, there's often very capable people in these utilities but there's

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just not very many of them. The people that, for example, that would be IT people that you might find in a large utility company in a big city, you often don't find in the small utilities. So it's the talent that's in these small utilities, and the budgets often aren't aligned to the adoption technology. Plus you often have guys who are just trying to run the utilities effectively but don't have a real mandate to take risks on emerging technology. So, one of the things that we said, is we built FATHOM. As you recall, FATHOM emerged from our regulated utilities. We bought thirty utilities over a ten year period. And all these utilities were small and what we found was that back offices were really quite poor, quite inadequate.

Anyway, my theory was that if you could put them all together as we did, you really got some great economies of scale. And it started to lead me to believe that, wow, I wonder if we could built a platform that was a gateway for our meter-to-cash, our meter-to-customer vertical and make it available to the whole sector, one hundred million meters, as a function of the cloud and running business processes that were, in most cases, very similar. Every utility I've built, I bought, has exactly the same business processes for running its building operations.

So this isn't the only business process in the utility, but it's one that's very similar between the utilities. And so as a function of that, we looked at it and said, "Wow, I wonder if we could take that, those business processes that were very similar, and build a platform in the cloud that scaled to all of the utilities in the sector, would we then be able to bring economies of scale to our fragmented sector?" And if so, were there some economies to be achieved?

And sure enough, that's been wildly successful. Now utilities all across the U.S. are adopting FATHOM as a way to manage their meter population and billing operations. And we are building and continue to build and invest in a platform that is much more like an AT&T or a big utility type construct as opposed to the smaller operations in IT and back office that most utilities have.

**Dave:** Sure. And so, you talking about FATHOM there, could you expand on what exactly FATHOM is? Is it just providing back office software, billing solutions, things like that? What all does FATHOM do?

**Trevor:** Yeah. So FATHOM merged from our regulated utilities as a way to bring economies of scale to our fragmented sector. FATHOM is a software platform. It's in the cloud. It defines the vertical between meters and cash or meters and customers. And it really takes that vertical which is fairly complicated and runs all that metering and all the different ways to read meters, whether their read manually or through drive-by meters or touch read or the latest kind of meter we have which is automatic meter infrastructure we call it tower-read meters - meters are being read every hour or even every fifteen minutes.



It takes all that data, puts it in a common platform in a common form. And then through a series of applications that sit on top of the platform, we're able to then see very easily, for example, every meter in your meter population on a geospatial basis, then look at water balance or things we call Virtual DMA which is a balance between what's pumped into a system and what's consumed. We can look at the health of the meter population, for example, now very simply, how many meters in the system? How old are they? Are they running efficiently?

Sometimes our meters are degrading in capability and then run that through rate engines to generate bills, interface with clients and some very sophisticated client facing applications now that allow customers to see their own consumption in real time, alerts and alarms so that we can say, "Hey, David, last night between midnight and 4:00 a.m. you used five thousand gallons of water." You've got a leak in your system, or maybe you're having a party, pool party. Who knows?

Now that we can create insights into customer behavior and utility behavior as a function of harvesting the value of that data that sits in that vertical. Everybody knows we need that data but the question historically, has been, "How do you get it into the hands of the people at the utilities and into our customers' hands?" And to do that, you need to sophisticated technology and to do that you need scale. And I knew if I could get some scale in the thing, I could build a fabulous back-office that the sector would appreciate. And that's what we're doing at FATHOM. Now, FATHOM is a software company, born from regulated water utilities. One hundred-fifty of us in FATHOM, brought in some sophisticated investors now and deployed a lot of capital in making that back office super-functional and high value for those utilities that we serve. And it's all about harvesting that data and driving revenue up, costs down and improving customer interface with the utility.

**Dave:** Sure. So, sounds to me like by creating this platform, you're able offer it to utilities that may not have the scale to develop it themselves. You're able to offer it them at, not discounted prices, but you're able to offer them the benefits of the development of this software for a lower price than they could otherwise develop it themselves.

**Trevor:** Yeah, that's exactly right. And when you look at, probably today, we've invested something like fifty-million dollars in this back office. And just at that investment level alone, most utilities are precluded from the mix, even the very largest ones in water. Even the largest water companies in the U.S., American Water, for an example, has a little over 3 million connections is a relatively small division in an electric company. And then from there, we go down rapidly to a few hundred thousand connections, but mainly the utilities in the U.S. are between twenty-five hundred and three thousand connections.

So, there's just no way that these utilities could develop this technology on their own. And nor could they hire the kinds of peoples that we're hiring now. You know, software developers like

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you might find in Facebook or Twitter or Skype or those kinds of guys don't generally, historically migrate to the water sector. Put four million or six million meters on the platform as we are and suddenly you have a pretty interesting technology company. You know, the software guy's interesting. The software guy who comes down to work at FATHOM are like, "Yeah, we love software but we're also pretty interested in water." And so we're trying to make water a little bit sexier, and we're bringing in that kind of talent that's attracted to software and software development.

And it's been fun because there's real meaning to what we're doing. This is a very important issue, and I think the guys are loving it because we have this chance to work on something that, it's not just how to order a pizza faster. It's how to save the world's water, and it's very important work.

**Dave:** I agree wholeheartedly. Now, how do you find the market because revenues are declining, at least the volume of water sold is generally declining and so that means revenues are declining. So how does this conservation efforts, how does that impact their use of a software service like that?

**Trevor:** So, it's very true what you say. The revenues are declining and have been for many years across the U.S. for a variety of reasons but primarily, I believe, it's the beginning of some price elasticity. So as price goes up, people tend to consume a little less and then you have people, like California, who are required to use less and the combined effect of that has driven down the per capita consumption. But, in FATHOM, what we found in most utilities, is that it is very hard to track your meter population.

And so, generally speaking, one of the reasons people buy FATHOM, is that revenue goes up as a function of improving the quality of your data. So, oftentimes, utilities don't have all the meters exactly right in the billing system that reflects their full meter population in the field. Or, those meters have declined over time or degraded in their capability to capture every gallon of flow. So, one of the reasons people buy FATHOM is that it drives revenue up. And quite materially. Historically, revenue goes up between 5% – 25% immediately in utilities and that's by cleaning up the data.

So whereas, revenues going down in utilities as a function of things we discussed, revenue can go up immediately as a function of cleaning up the data. So you have a nice way to say, "Ok. We're all going to use less water, but now we're going to find all the revenue available." And that can be very, very material for utilities. Then because of economies of scale, in our billing's vertical, but you'll chuckle at this but, when you think about the building vertical in a phone company, reading your data, generating a bill and sending it to your customers and managing remittance, that cost for AT&T or Verizon or somebody probably costs about one dollar per bill per month, that billing vertical execution.

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In the water sector because of the technology we have and the manual operations that are in that vertical, that vertical costs about 10 dollars per bill per month. So 10x as a function of diseconomies of scale. In FATHOM we bring economies of scale to the fragmented sector and so as a function of that, we can materially reduce the cost of operations of that vertical in water utilities. So that's the second benefit for utilities.

First, revenue goes up, getting the data sorted out, figuring out the health of all the meters, getting that tidied up. The next piece is materially decrease the costs of operation because of scale and the sophistication of the vertical. And in that vertical allows for customers to go online, pay their bill, see their account. What happens in small utilities is that a lot of the call volumes that come in are just to pay a bill. And so if you can automate that in what we call channel shift like the airlines or the banks do, get in, see your account, manage your transactions, pay your bill, set up a payment plan, those kinds of things. And automate those processes and you take significant costs out of utilities. So the third area that FATHOM helps utilities is that it drives customer satisfaction, materially higher as a function as self-serve.

**Dave:** Sure and let me ask a couple questions. With all this data, it sounds like the utility needs the AMI system implemented first or is that kind of a package deal with what FATHOM is providing?

**Trevor:** Well, it's interesting. When you think about the power sector and where AMI is, or automatic meter reading or reading meters every fifteen seconds or more often and the utilities use that data to help educate their customers or to price off-peak power for example, so AMI in power is quite well established in the market. We say it's on 75% - 80% of the meters in the U.S. have some form of smart meters. In our sector, it's not that way. The AMI or tower-read infrastructure is on something like 5% of the meters in the U.S., so a relatively small number. And interestingly, where you find it is on the bigger utilities.

So my thesis is that it's not adopted because even though that technology, and there's quite good technology out there that can read meters often, the utilities can't use the data in most cases. So utilities say, "Great, I'd love to have hourly data in my water utility, but I can't use it for my operation."

So, what we're doing at FATHOM is making that data useful for utilities. And as a function of that, the question you asked, if you have manual meters in your utility, and you're thinking about AMI, well, what you need as a migration pathway. You need a way to go from manually read meters, the guys on the clipboards, to potentially drive-by meters, that's where people want to go in some cases. They want to jump right to AMI but before you do that, you have to have a way of managing that meter population and making the data useful through the rest of the utility verticals, the ways that operators use that data and the consumer vertical.

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And so utilities now are saying, “Now, I’ll put FATHOM in right now so even if I have manual meters or all AMR meters like American Water.” What it does is create a pathway where you could then put on some AMI meters. Maybe your city wants to put on AMI meters on the high value commercial meters or those meters that are for gated communities or hard-to-read meters, whatever the drivers are. Now FATHOM provides a way where you can have all different kinds of meters, reading at all different rates, some hourly, some daily, some drive-by. And it puts all that data into a format that is geospatially driven and what we call canonicalized so it all looks exactly the same. And then those applications you want to put on it where they are to drive efficiency in your operation or for your guys in the field or for your customer operations, then you have a pathway to not only adopt more a technology but harvest the value of that data in your day-to-day operations. And I think that’s why AMI has been so slow to be adopted in our sector.

I’ll give you an example. In Global Water where we were adopting this technology, where we were able to get all the data and go to all the metering infrastructure in the field, but there was no software out there that would use that data or the seven hundred-twenty reads an hour, a read every hour. There was no software that could make that data useful for me and my billing operations. And that’s why we built it to fill that gap.

**Dave:** I think you exactly right. When I’ve talked to some utility leaders about it, they said, about AMI adoption, they said, “How are we going to manage all this data? What are we going to do with it?” And so that’s a big stumbling block, I think, for some utilities. And it sounds to me like FATHOM has answered that question. In all your experience, with technology adoption in the utility sector, what are some ideas that you might have for speeding technology adoption in circumstances beyond FATHOM. Because there’s a ton of great technologies out there but the adoption uptake is so slow that they may be dying on the vine. Do have ideas for how we can speed technology adoption in the utility sector?

**Trevor:** Yeah, I really do. It’s one of these areas with a lot of passion for me and my partners. For years we’ve seen really great technologies coming out of the U.S. but also Israel and Australia, Canada, and you know I always say and I get asked to talk about this on panels and what not and I always say, “There’s no shortage of technologies in the water sector. There’s a shortage of business models and channels to market.”

So when you think about you and your scientific partners have developed a little technology and now you’ve tested it and you’re all focused on the technology and it’s great. And then you go out there and you think now it’s time to take this out to the market. And what you find is that there’s a lot of utilities, like we said, fifty-six thousand, they’re quite risk-averse.

So they’re not very interested in saying, “Hey, David, I’m going to take your new technology and put it in service today.” So that sales cycle and that adoption cycle is very, very slow. And

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oftentimes, those great technologies die in that process of getting across what we often call the valley of death or that commercialization process. Getting from a very good technology to tried and bench-tested and proven to commercial liability takes a long time and a lot of investor capital. Even the guys who raised a lot of capital have often died in the sales cycle as a function of this issue.

So, I've got a few ideas and I'm actually trying to help in a couple ways. But what I think is important is that us in the utility sector, we have to recognize that water is an essential service. These guys who run our utilities are not in the business of taking risks on new technology. And so for presenting technologies to utilities, we have to be very thoughtful of how that's done. And one of the ways we've done that is by not only changing the business model which makes it very low risk to adopt our technology, so we call that risk transfer, actual risk transfer, we'll put our money where our mouth is. But the business models are designed that the barriers to entry are very low. So cities can adopt incrementally. They can try it, and they can do it in a fully risk-free way. And so that starts the process. But for little utility companies coming out of Israel or Australia, it's still an issue.

So what we've done in FATHOM is really exciting for us and a lot of utilities is that, and for a lot of technologies is that there really is a need in utilities to adopt technologies that increase revenue or decrease cost or improve the operational efficiency of utilities or improve the customer journey, but it is difficult. So in FATHOM, what we've done is created what we call the FATHOM store. But, what that basically allows us to do now is take our platform which is on five millions meters, something like that today, and provide a way for technology providers to code to our AP&I. So what that means is that as they're entering the sector, and they are wondering how am I going to address this massive addressable market? One way they could do it through FATHOM. So instead of having to go to hundreds of municipalities and trying to sell directly to these decision-makers, they can clip into the FATHOM store and suddenly that technology is available to all of our clients instantaneously. What that does is it provides a channel to market.

And so FATHOM is both a technology stack defining that vertical we talked about, meters-to-customers, meters-to-cash, but it's also a channel for emerging technologies to access the market. And we think by tweaking the business model and having that scale will both accelerate the adoption of technologies but make it simpler for utilities to adopt a wide-range of technologies more quickly. So it can be quite symbiotic. And this is one of the things we're doing primarily to, as you say, accelerate adoption technologies in our sector.

**Dave:** Fantastic. Well, Trevor, you've been absolutely fantastic today walking us through all these issues with technology adoption and using FATHOM as a great example. For those folks who want to find out more about you and about FATHOM, where can they go to get that information?

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**Trevor:** Absolutely, David, I appreciate the time very much. Please, anyone can call us, you can see our website at [www.gwFATHOM.com](http://www.gwFATHOM.com). Or you can always call me directly, 623-203-8667 is my cell phone. I'm available, call me anytime. We're very passionate about what we do in the water sector. We're trying to make a difference. It can only be done through partnerships in my mind. So I am working with most of the meter manufacturers in the sector, the big engineering firms, the many, many technology companies and I think together we can move the needle. So I'm excited, David, and I appreciate what you're doing. It's fabulous. Let's get the word out there, and I look forward to chatting with again one of these days.

**Dave:** You bet, Trevor. You bet. Thanks again, really appreciate your time.

**Trevor:** Thank you, sir.

**Dave:** You bet.

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**Dave:** I hope you liked that conversation with Trevor Hill of FATHOM. I hope you can tell what I meant when I indicated that Trevor's knowledge and experience showing through. And he was great to work with in getting the interview put together.

Here's my takeaway from the interview: Water is heavy. Those are the first words I ever heard Trevor speak when I met him initially at a water conference a while back. That water is heavy sets the stage for all of the challenges we face in the water industry today. It explains why the water industry is fragmented. It explains why it's been so difficult to gain economies of scale in the water industry. It explains why water infrastructure is so expensive – both to operate and for its initial construction.

Because water is heavy, the industry is more fragmented. Trevor mentioned the 50,000 plus water utilities in the U.S. multiple times. That fragmentation makes it difficult to gain economies of scale. Interestingly enough, I'm reading Great by Choice by Jim Collins and one of the themes about innovation that I noted early on in the book was that great business leaders aren't simply good at innovation per se. They're good at scaling that innovation. That's what the water industry needs as we face a future of rising costs and increasing scarcity for a tremendously important resource. It sure seems like Trevor has found that sweet spot of scaling innovation, and hopefully, that means good things ahead for the water industry.

Well that wraps it up. You can also find the Show Notes for this session at <http://thewatervalues.com/pod68>. Please let me know what you thought of the interview by

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leaving a comment at <http://thewatervalues.com>. You can also tweet at me @DTM1993 or tweet about the podcast using the #WaterValues. Thanks again for your listenership!

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.