TWV Podcast #026
Rolling Out AMI in San Francisco with Alison Kastama and Heather Pohl (Part 2)
Show Notes at http://thewatervalues.com/pod26

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! Thanks for joining me.

Today, we'll finish up our conversation with Alison Kastama and Heather Pohl of the San Francisco Public Utilities Commission about their roll-out and implementation of AMI. Alison and Heather finish the interview strongly and discuss additional deployment issues and customer interface issues, as well as relaying a story about how people have used the AMI system to track their water usage. They provide a great conclusion to the interview, so enjoy the second half of the interview, and remember to stay tuned until the end for the disclaimer.

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

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Dave: In terms of choosing to deploy, how you chose the customers to deploy to first, was there any rhyme or reason? What protocol did you use to figure out, okay, we're going to deploy in this area first and then we're going to move on to area 2 and so on?

Heather: Not so much from a customer revenue-type perspective. I know some utilities start with commercial meters because that's sort of the most bang for the buck. What we really did was we planned a shorter deployment than some utilities do. We planned a two-year full deployment. And obviously that fell behind for a lot of unexpected things in the field and some product delays and systems planning.

We felt that it was more important to transition full routes over to meter reading. That really is part of the business case is not having to send staff out to a certain area. So, we really followed our meter reading routes. If customers called and if customers were having billing issues, and we told our customer service department, as well, if you've got priority customers that you've been estimating for a while and we'd like to get them on the priority list or customers that call.

We had some customers actually call and say, I'd really like to get an automated meter. So we did do priority. Those are not as easy because you have to take your contractors out of one part of the city and move them to one house in the middle of a block. So obviously for efficiency, you kind of really have to just knock them out geographically.

We picked certain areas in the beginning that we thought might be harder from an RF perspective. We did scalability testing three times throughout the project for our data collectors to make sure it was robust enough. Because you do a propagation study and you plan on where

you're going to put your data collectors. And then you might have gaps, holes that you didn't realize you were going to have once you actually get meters installed and you aren't getting as many reads as you'd like. We actually relocated a couple of data collectors for various reasons. Poles got knocked down and so we lost them, and we had to move them to other locations. But you are a little bit constantly tweaking your system so we tried to pick some of the more difficult areas that we thought would be an RF problem and do those earlier on. We did do that so that we could see if our network was looking like it was going to be robust enough.

Dave: What's it looking like now? How's it functioning at present?

Heather: It's functioning really well. Like I said, our contractor has finished with their installations actually last August, which is 95% of the city. And I believe 97-98% of those customers that have the automated meter installed by our contractor are already being billed on the AMI system and MyAccount is available to those. Our next challenge will be the last 5%. Our read reception is right about where we thought it would be. We modeled about 98.5% of the reads we expect to get in every day, which is typical from what other utilities have seen and is pretty reasonable. We're going to have situations in San Francisco where we have meters – most of our meters are actually out in the sidewalks and pits in front of homes. And we have a lot of cars that park up on sidewalks and things like that which might be covering the meter pit for half the day. So unfortunately, we won't get all of the transmissions, but we expect 98.5%. So 98.5% of every hourly read for all 170,000 plus meters out there.

I just actually checked yesterday, and we're at like 98.4 or something. So we're very close to what we thought. We actually did have to adjust our collection system from the beginning of the project, but not significantly. It was very reasonable. We're very happy with the way it's performing. Now we're just getting flooded with all this data and trying to make sure we're making heads or tails of it and using it as best as we can.

Dave: What do you do when you can't get the data transmissions? How do you bill for that?

Heather: Well, we still have manual meter reading staff in-house. We kept a percentage of them as planned originally. Part of that is QA because you really still need to get out to the field once a year to have a look at the field conditions and make sure that there's not tripping hazards and do a quality check. It's recommended by AWWA that water utilities do a quality assurance visit once a year. So we planned on keeping those meter readers on board for that. They'll be there for the opt outs. They'll be there for problems.

You run into things that aren't expected. We found that the wire that connects our meter and our MTO, we had certain locations where we've got rodents that are eating the wire. We've got a couple ideas of how to deal with those and try to mitigate that. But you just don't expect it. So all

of a sudden, you just stop getting a read. So in those cases right now, we are using manual meter readers to collect those.

Dave: Let's pivot a little bit and talk about the customer experience. Can you talk a little about the MyAccount portal and what's all included in that and the kind of data that the customers can see?

Alison: Sure. I'll take this one. So what we did – Heather talked a lot about the technology needs. When you go to automated meters, you get a lot of data. We decided to challenge ourselves some more by integrating our billing system and that automated meter information so that we could give that information to our customers. The great thing is, we've got a place that's really visually interesting that our customers can go, and they basically just sign up with their account number and a meter number so we can verify their identity. They can go online, and we've given them real time data as to what the status of their payment against their bill is, what their most recent bill is, sort of a very usual system for looking at utilities, like a PG&E or some other credit card bill. But we also were able to basically put in some use graphs that are pretty visual about what your billed use was.

We know that our billing data is always validated before we bill you so it's a very consistent data set, and it's based on the automated meter reads. But it's a validated, verified and already published sort of data set. So we put that up first so customers can see the last six months of their – basically, how much water they used based on their bills. And then we give them the option to go in a little bit deeper and look at their daily use. So when they go and they start manipulating the graphs, they can start to look at what is really the automated meter information that comes to us.

Heather mentioned we get four reads a day. But what we do is take one read a day, we do all of our validation checks, and we basically then provide it to the customer. And, again, we want to make sure that the information we're giving is accurate so we do all those usual checks that we've done in order to ensure it is as accurate as possible. And then they get to look, and they can pick different periods. But we'll show them off the bat the first week since the date that they're looking at, today's date, and going back seven days. And they can see on a daily basis how many gallons of water per day they're using.

We also have a little mechanism in there that we've asked people – how many people live, if you're in a residential house or a multi-unit building like an apartment building, how many people are in that building assigned to that meter account. And what that allows us to do is say, if there's four people who live in your single-family house and in San Francisco a conserving use is about 49 gallons per person, per day, we can then take that, calculate it and give them what we call a green bar. It just shows up as a green bar on the graph, and it tells you, are you above it or below it. How are you doing if you look at your household against this conserving number of 49

gallons per person, per day. Then that gives them an information point, and it really sort of triggers some inquiry and discussion, like where am I? Are we conserving? Are we below that line? That's great. If not, where am I? Am I above it? Etc.

The greatest thing I think we've seen is, when you start to look at the daily numbers, you get a really interesting like, "Oh, what happened on Sunday? My use doubled." Or what happened last week, Wednesday? What went on that day? And you see this pattern, and you start to discover that, oh, Sunday's when you did laundry or Wednesdays when your outdoor irrigation goes on automatically. You start to have a much better connection to what your use number is and what actions are affecting it. It's really a great, especially now when we're asking people to reduce use. It's a really great thing to be able to look at on a daily basis and try and figure out the mystery of, "Oh, I just use water and it goes to my bill." Now you have a real connection to what it's being used for.

Dave: Have you had any customer feedback on, hey, I was checking my numbers because usage spiked one day and I realized I was doing something inefficiently? Do you have any stories like that from customers?

Alison: I have a staff member who actually was showing her own personal account to some other staff, and we did exactly that. We were like, hey, what happened? It seems like you use about 50 gallons per person per day, and then on that day you had 150. It was really noticeable jump, and she went back and, sure enough, the automatic timer on the irrigation system was failing and wasn't working. And her husband had basically reset it manually and turned it on and forgotten about it. So, once she figured that out, obviously, they were able to, by that point, they had turned it off. But it was a very clear, that's what that quantity of use was, that they'd gone to basically deal with a non-working, automated irrigation timer and forgotten it.

Dave: What other types of customer response have you had to the system? I know it's been out for what about two months now at the time we're recording this.

Alison: I think people are really interested, and I think they're interested in more functionality. With this information, you start to ask, can we provide them alerts if there's unusual use? Can you sort of send me an email if my use is high? Can I set my own alert to say, if I use more than this email me or something? So we're looking at kind of that sort of functionality. I think people would also be interested if they could get even more detail, like breaking it down in probably less than a day. That all depends on the validity of your data, and there's a lot of data processing that goes with that. So we're trying to make sure that we get what we have now out to the most customers we can, and then sort of continue to make it a useable tool and modify and update and add functionality to it.

Dave: Let's talk a little about the benefits to the utility. I'm sure these were part of the business case, but what are the benefits that you kind of expected to get out of the AMI system?

Alison: Heather, do you want to grab that one?

Heather: Sure. The business case was really, obviously, there are operational savings with deploying the automated meters as opposed to manual reading. That was a big part of our business case. Meter lives are typically 15 to 20 years. Having meters that aren't maintained and changed on a regular basis aside from automation – I know a big part of our business case was we had meters that were not registering accurately. They were losing a lot of water. So, again, that's revenue loss for us, which ultimately affects rates. One customer who has an accurate meter is paying for the customers who don't have accurate meters. So really getting on top of keeping our meter population accurate and current helps customers pay for the water that's being used and helps minimize system losses for the utility and the customers.

From the utility perspective, we're really still, and not just the SFPUC, I think other utilities, and we've been involved in forums and discussions with other utilities that have automated reads and all this data, and they're kind of like what do we do with it all? The water utilities initially were only getting two to four reads a day. Now, we're starting to deploy hourly and we've all got this hourly data. And it's a lot of data to manage. And we're trying to think of other ways that we can use it to understand the way our system operates and minimize system losses and increase leak detection within our system, not just for our customers as well. So those are definitely benefits that are not yet necessarily realized by us or other utilities, but that we're moving toward. And the vendors are moving toward, as well, as far as helping offering tools to us to help us with this.

We're looking at other ways we can use our network. This is still sort of in the infancy, as well, in the industry. But we've got a fixed network up in San Francisco now. There's other things out there that can potentially communicate with the fixed network that can bring information back to the utility. And those are discussions that are starting to happen in this industry and that we're interested in, and starting to be involved in as well.

Dave: And you've got a fairly small time period in which you've been collecting all this data. Have the benefits been in line with what you've expected?

Heather: Absolutely. And we haven't yet really finalized all of our testing results. As I've said, we're still really closing out the deployment of the project. But we kept 5% of the meters that we exchanged, 5% of the old meters that we took out of the ground. And we expected that we were losing about 3% of the water and the revenue and registration on those meters. And we've seen that and more. A lot of our larger customers had meters that were and probably are still maybe not sized the way they should be. So the AMI data helps us really understand how they use water

because we're getting it much more frequently. And do we have the right kind of meter application?

The industry has exploded with different kinds of new electronic metering technologies. When you change the application, when you change the use at a certain site, you need to re-evaluate the meter application. So we have a lot of old warehouses that were on a turbine-style meter, for example, that are designed for really high water use and not for low flow water use. Some of those are converted into lofts so that we're missing a lot of registration on a lot of the low flows, all the toilet flushes that are going on.

Having the hourly data and really understanding what's going on at the sites and how those meters are operating are going to help us make better decisions on meter applications. That's definitely a utility benefit and I think a customer benefit, as well, overall because really all the customers should be paying for the water they use.

Dave: Have you seen any benefits that you kind of didn't expect in this short time you've been looking at the data?

Alison: I'd ask you this, Heather, was MyAccount, the online version of this, one of the original thoughts?

Heather: It wasn't actually. No, that's a very good point. No it wasn't. We knew that we wanted to use this data for leak detection, but no one really knew how. We're really having real conversations about that now. The first step as Alison mentioned is offering this to customers so that they can understand what's going on, day-to-day with their water usage. Especially if you're going to be asking them to potentially change those habits.

Alison: For us, I'd say it's been a great timely beneficial sort of by-product. I'm not sure it was – providing data directly to the customers may not have been the very first on our list of priorities for why the utility did this. But it certainly for us in the drought right now, it's a tremendous resource to be able to give them that information. Last year at this time, we wouldn't have been able to do that. For us, even with the labor-intense time that we put into developing this integrated system, I think it's great. I think there are more things we can do with it for customers as well. We've at least started down that path of how to use it, both for us as a utility and as much for the users so they can be aware of what they're doing and maybe get some proactive notification in the future.

Dave: I just imagine that it's just a great tool to enhance the customer experience and continue to keep water at the top of your customers' minds.

Alison: I hope so. I hope it does that. I talk to people all the time about the value of water and the fact that as utilities, we've built such a tremendous infrastructure. All of the public utilities. That goes for the wastewater side, as well. And, unfortunately, in the generations that have evolved and lived with this infrastructure, they lose a connection to what the value of it is. When you don't grow up on a farm with a well that you have to rely on or maintain in order to get your water on a daily basis, you lose an understanding of how much it takes to actually get it to your tap every day so you have the ability to take a shower or flush your toilet and drink it from the tap, cook with it, etc.

These public utilities are such a marvelous development of the urban setting. They're so hidden in a way. It's a disadvantage for the public. Unless you spend the time to think about it, it's not very prominent. It's honestly – San Francisco gets their water from 167 miles across the state. It's working 24 hours a day, 7 days a week. There's always people basically planning for that water to be here. It takes a large system that's elegantly engineered in order to make sure that happens for everybody here on a daily basis. I hope that even this little piece of information starts people to think oh, there's a lot that goes into it and there's a connection between when my irrigation goes off or when I wash the laundry to how much I use. And they just start to think more about what they're doing with the water that's getting to them.

Dave: Do you guys have any final thoughts on the AMI system you've deployed?

Heather: I think from my perspective and utilities listening, often I get asked to speak as do a lot of the other utilities that have deployed on our experiences and lessons learned and these types of things. It can come off as intimidating like it's a lot to chew off. And I look out into the audience and I see like these glazed eyes of these people that already have full-time jobs and are being asked to look into automation, and I have to stop and say, hey, listen, this is a great thing to do. I know it sounds daunting, but it's really doable. People are doing it. There are contractors out there and these vendors, they know what they're doing.

If you build a good plan and a good team to support them, this is definitely doable. And the benefits that we've just talked about on this podcast this last half hour, I mean the benefits far outweigh the fearing of just the daunting idea of going to each customer and cutting off their water and installing this meter and changing the way you do business. I don't want utilities to feel nervous, that they can't accomplish that.

Alison: And I think from my side on communications and really more public outreach, certainly it's a multi-disciplinary activity to do something like this. Once you do convert over to automated meters, your customers are probably going to want to be able to access that data. And you should be looking at how to get it to them and to get it to them in an accurate way.

None of that is absolutely easy off the bat, but we had discussions here amongst customer service, communications and outreach, our water conservation department, our head of water enterprise, as well as the technology IT department and Heather's program. It just required a lot of discussions to make it the most viable tool and to get it out to our customers so that they can access some portion of it as well. But it did require a discussion and definitely technology. As we all know, technology requires people to work on it. To have an understanding that data has to be backed up, there has to be infrastructure in place for that data and all that technology to occur. That can be sometimes a little intimidating if you're working on a regular process. This is a new process that requires more support.

Dave: Alison and Heather, thank you again. You have been absolutely fantastic talking with us about AMI deployment and the issues surrounding the drought in California. For those folks who want to find out more about the San Francisco Public Utilities Commission, where would you send them?

Alison: sfwater.org, that's our main website. San Francisco Water.

Dave: Is information about the AMI program on there?

Heather: It is, yes. There's a link to it on the website, and I believe it's back slash watermeters, but it's also available through – Alison, do you know what the link is directly to the website?

Alison: For the AMI meters?

Heather: I think it's under Customer Service. But I believe it's sfwater.org/watermeters.

Dave: Terrific. Again, thank you so much Alison and Heather. I really appreciate it, and we'll talk to you soon.

Alison: Thank you.

Heather: Thank you.

Dave: You bet, bye.

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Dave: Well, that was the second and final half of my interview with Alison Kastama and Heather Pohl. As you heard in Session 25, they were terrific.

As with the first half of the interview, there were lots of takeaways here. I found the deployment strategy to be very interesting. SFPUC generally deployed on a meter reading route basis and made sure that the deployment was substantially complete on that meter reading route before moving on to the next deployment. It seems that SFPUC used a logical strategy to ensure that the deployment went smoothly rather than simply deploying on a revenue-generation basis where large meters would have been the focus of the AMI deployment.

Another important takeaway was the customer experience. Alison did a great job talking about how SFPUC set up their MyAccount portal to lead to engagement with their customers. They used graphs and other visually interesting information to interact with their customers. I think there's a lot of good lessons there just about customer interactions between utilities and their customers.

Of course, the most important takeaway, is that the benefits have corresponded to the expectations. There's no shortfall there. I think that SFPUC's success with AMI will lead to other utilities deploying AMI and realizing the numerous benefits, whether they be the customer engagement, the ability to identify leaks, to alert customers of leaks, to better understand how customers are using water and many other benefits that come about from the improved and more abundant data that the utility has at its disposal with an AMI system. If you haven't figured it out yet, I'm a big fan of AMI systems.

Well, you can check out the Show Notes for this session at http://thewatervalues.com/pod26. And please don't be bashful in letting me know about what interested you about the interview by leaving a comment on the Show Notes or by emailing me at david@thewatervalues.com. You can also tweet at me @DTM1993. And don't forget to rate and review the podcast on iTunes, Stitcher and other podcast directories and don't forget to tell your friends and colleagues about the podcast and also, make sure you 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.