

Questions presented during the Aging Infrastructure Webinar 1

Q: Do you have any suggestions for educating customers so the higher rates to cover infrastructure replacement are justifiable to them?

Q: How do you convince a community that it's an investment versus a tax?

A: A large part of the issue is a change in language regarding the issue of water rates. Paying for water should be discussed as “an investment” in the community not as a burden for the customer. Elected leaders and water managers often have an apologetic attitude about water rates and project that they are “sorry” to have to charge. There is an industry wide perception that water should be cheap. It's time to change that perception to water is the foundation of the community and if the water utility isn't strong (meaning well taken care of) then the community won't be strong either. The water prices should reflect the cost of service and utilities should be very proud of the service they provide and confident in the rates they charge. It isn't so much that people don't value water – we can see that in the fact that people are willing to pay extremely high prices for bottled water (as much as 1000 times the cost of tap water.) The problem is that we are not always transparent regarding the need to charge and why the rates are what they are. We need to be more clear regarding the need to continuously repair, rehabilitate and replace infrastructure, in very specific terms, to keep the water flowing.

The average cost of water on a monthly basis in the U.S. is only \$30/month, or roughly \$1/day. Even if the rates doubled, the average would only be \$60/month or \$2/day. Consumers receive a gallon of tap water at their tap, fully treated, available any time they want it for less than 1 cent. There is no other product in all of America that cheap. Consumers have had an incredible bargain for many, many years but now it is time to make more of an investment because the infrastructure has been too neglected for too long.

The other factor that should be considered is, if not the customers, then who is going to pay? Someone has to pay for the source, treatment and distribution of water, who will it be? If it's the state government, then consumers have to be willing to pay higher state taxes. If it's the federal government, the consumers need to be willing to pay higher federal taxes. It's important for consumers to understand that one way or another, the water service has to be paid for.

The best way for us to change the dynamic is an industry wide change in how we think and talk about infrastructure and see it as an investment in our families' health and wellbeing, quality of life, and community economic well-being.

Q: What tools are available for infrastructure assessment?

Q: Do you use video cameras to determine the useful life of pipe? If so, is it expensive?

A: You can use any tools available to you. There are tools available to video your pipes but it can be very expensive. You would want to go to your risk assessment and possibly video only the highest risk pieces of pipe to tell you what is happening inside the pipe. For example, a small diameter pipe (less than 10" or 12" for example,) under relatively low pressure, serving a residential area would be relatively low risk pipe and would probably not be worth videoing. On the other hand a major transmission main, under high pressure serving major businesses or large sections of the community would be a relatively high risk pipe. If that pipe is under a highway or railroad track or serves a critical customer, the risk may be even greater. It may be worth spending the money to video that type of pipe to learn more about its condition.

Besides videoing pipes, there are leak detection tools you can use to put inside of the pipe, as well as above ground technologies in which you listen for leaks. These technologies will tell you if there are any holes or breaks in the pipe. They won't tell you what the pipe thickness is or other condition related

information, but they are less destructive and usually less expensive than videotaping, especially if you use above ground technologies.

There are some other above ground and in the pipe technologies that can estimate pipe thickness. These technologies provide some information regarding how the pipe is degrading over time. There are technologies for pre-stressed concrete pipe that determine the number of wire breaks which helps to estimate pipe condition.

All of these techniques estimate the pipe condition. They are not a perfect indicator of what is going on, but pretty much all we have short of digging the pipe up, cutting it open and seeing what it looks like. Therefore, the questions to ask yourself are:

- What information will I get from the condition assessment?
- What would I do with that information if I had it? How would it help me make decisions?
- Will the benefits of the information outweigh the costs of getting the information?

If the benefits are greater than the costs, it is worth doing. This is more likely to be the case with high risk/high criticality pipes than medium risk/medium criticality or low risk/low criticality pipe.

For other assets besides pipe, use the technologies available to you to determine condition and assess useful life. If you can see the asset, perform visual inspections. For other assets, such as wells, measure well drawdown, monitor flow, monitor pump run times, put a camera down the well. For pumps you can do things like vibration analysis. For each case, ask yourself the above questions. What information will you get, how will you use it and what would it cost to get it?

In all cases, use all information available to you, including performance now, past performance, visual inspections, condition assessment, maintenance history, etc. in making your best estimate of condition and useful life.

Q: Is there a charge to communities for Asset management plans?

A: There doesn't have to be. In my opinion, the best asset management plan is one you do yourself. That way the plan is understood by all, there is buy in throughout the organization and it contains elements that fit the culture of the organization. When a plan is done by a third party, it may not be understood by the organization, may not contain what the organization needs and therefore, may not be used by the organization. There are many guides available on how to do asset management, including AM KAN Work! developed by the Southwest EFC (at the time of development our name was the New Mexico EFC.) This guide is available at the following link: <http://southwestefc.unm.edu/amkan> using the following username and password:

username: amkanwork

password: krownakma (this is the username spelled in reverse)

There are also videos available for asset management. We have a five part video series on the efcnetwork.org website. There are videos available for free as well as other AM resources on the <http://inframange.com/> website.

The plan you develop may not be highly sophisticated and may be quite simple at first. It will improve over time as you learn more about your system. Asset management is a very self-teaching process; as you do it, you get better.

If you do contract out asset management, I strongly recommend that you do not contract out the whole thing. Instead, pick and choose portions that you might have difficulty with, such as estimating replacement value or developing the map. Continue to stay involved throughout the entire process.

If you do asset management, you will reap benefits. The more you do, the more benefits you will receive.

Q: Please describe the 300 year replacement cycle.

A: Replacement cycle refers to how frequently an asset will be replaced. For example, if someone installed a pipe in 1900 and they were on a 100 year replacement cycle they would plan to replace it in 2000. If they were on a 300 year cycle, they would replace that pipe in the year 2200. This means that the utility expects that this piece of pipe will remain in service at the level required by the customers for that entire time. The replacement cycle can be calculated based on the amount of funding the utility is investing in its infrastructure.

The problem comes in when the replacement cycle doesn't match reality. Just because we want an asset to last for 300 years doesn't mean it will. This approach means that the asset will fail long before we have the money in place to replace it. Therefore, when the pipe does break, we have to deal with the aftermath of the event and we have to figure out where the money is going to come from. If we haven't budgeted for it, the money will have to come from another part of the utility, meaning another area will be underfunded.

The best approach by far is to give the most realistic estimate of the useful life of an asset and to plan for the replacement of the asset during that time span.

Q: So materials, manufacturing, and installation are also part of the answer to the poll question "What characteristic best defines aging infrastructure?" (The correct response was useful life) ?

A: The question was what "best" defines aging infrastructure and the answer is useful life. The calculation of useful life does take into account all of the information we have available, such as condition, manufacturing, installation, age, and many, many others. Although these factors are part of useful life, the overall characteristic of useful life is what is most important to us. The main point is that we don't want to use "age" alone as the indicator of our infrastructure. Age is one factor, but it is not the most important and if we look just at age we will replace some assets too soon and some too late. The more we can estimate useful life, the more efficiently and cost effectively we will replace our assets.

Q: Property taxes from our district are directed to a larger adjacent water district; what benefit does our small water system get out of tax money going to another water district?

A: There may be little benefit currently to this situation. This is probably an issue to be addressed in some way. One possibility may be to seek benefits from the larger district, such as sharing an operator or having them do your billing for the taxes they receive. Another possibility may be to seek to have at least a portion of the taxes allocated to your district. The way to start would be to try to determine how much tax money is generated from your water system that is going to the larger system. This would help you make your case that you deserve some benefits from the taxes you are paying and they are receiving.

Q: Would you like to comment on fire suppression?

A: In general, having the ability to have fire flow is a good thing for a community. However, the situation is not clear cut. For a small community, especially a very small community, the economics of having a system that can handle fire flow verses having another way to fight fires (such as fire trucks that can hold their own water) is an important consideration. Fire suppression requires a minimum pipe size of 6 inches, as well as a storage tank that can hold a sufficient volume of water. In a small system, this may mean stagnant water because there is insufficient use on a daily basis to turn over the water and this may lead to water quality issues. This can also mean a much more expensive water system to install and maintain if it has to be greatly oversized to allow for fire flow verses normal daily use. If an existing system doesn't have the correct pipe size, upgrading the system can be very expensive. Whether or not it makes sense to do that is a community-specific decision.

As with most issues in infrastructure, the best way to determine if fire suppression is right for the community is to do an assessment of the data:

- How many fires does the community have?
- What are the other options for fighting fires if the water system does not have fire flow?
- What would it cost to meet fire flow requirements?

- Are there other community benefits that could be achieved by installing the additional infrastructure to meet fire flow?
- Are there any negative effects to the community that could occur if fire flow were added to the system?
- Would adding fire flow effect the ability of the system to meet compliance or consumer expectations?
- How would adding fire flow effect the operation and maintenance costs of the system going forward?
- How would fire flow be paid for?

The costs of adding the fire flow can be compared to the expected benefits to determine if this is right for the system.