We present below a transcript of our recent panel discussion with Greg McIntyre, EVP, Building and Infrastructure, Jacobs Engineering, and Walter Lynch, EVP and COO, American Water. We have edited the transcript below for clarity. Minor grammatical changes that do not impact the meaning of content have been applied. The opinions expressed by Mr. McIntyre and Mr. Lynch herein do not necessarily reflect the views and opinions of UBS. UBS accepts no responsibility for the accuracy, reliability or completeness of the information and will not be liable either directly or indirectly for any loss or damage arising out of the use of this information or any part thereof.

Attendance List:	Steven Fisher - UBS Industrials Analyst Rose-Lynn Armstrong – UBS Utilities Analyst Greg McIntyre – Executive Vice President, Jacobs Engineering Walter Lynch – Executive Vice President, COO, American Water
Title of Meeting:	UBS Mini-Water Conference - Boston
Hosted By:	Steve Fisher Rose-Lynn Armstrong

Coordinator: Good day and welcome to the UBS Mini Water Conference. During the presentation your lines will remain on listen only. [Operator instructions]. Today's call is being recorded for replay purposes. And I'd now like to hand over to Steve Fisher. Please go ahead, Steve.

Steve Fisher: Great. Thank you, Sally, and thanks everyone here in the room for being here for our panel discussion today. And thanks to those that are on the line. I'm Steve Fisher, UBS Industrial Analyst. I cover machinery, engineering, construction. And I'm joined here co-hosting with Rose-Lynn Armstrong from the UBS Utilities team.

And the panel that we have here today is called New Challenges in the Water Sector Create Opportunity and Innovation. We are very pleased to have our panelists here. We have Mr. Greg McIntyre from Jacobs Engineering and Mr. Walter Lynch from American Water.

To go through some of the introductions on our experts here, Greg McIntyre is an Executive Vice President of Building and Infrastructure for Jacobs Engineering. He began his career in 1981 and brings more than 36 years of professional experience in the engineering and construction industry, and has held key management, operations, and technical roles in the infrastructure, water, and environmental sectors.

Greg serves on Jacob's executive leadership team. He's previously held senior positions with CH2M and he has a master's degree in environmental engineering from Vanderbilt and a certificate from the advanced management program at Harvard Business School. And I'll turn it over to Rose-Lynn to introduce Walter.

Rose-Lynn Armstrong Walter Lynch joins us today from American Water. He's an Executive VP and Chief Operating Officer there. Walter has more than 20 years of experience in regulated and market-based water in the waste water industry. He's responsible for overseeing the performance of American Water's 16 regulated states as well as the health, safety, and system-wide engineering. He's also responsible for operations across the company's market-based businesses. So thank you, Walter, for joining us today.

Walter Lynch Thank you. Thanks. It's great to be here.

Steve Fisher And now just one more administrative thing before we get started. As research analysts we are required to provide certain disclosures relating to the nature of our own relationships and that of UBS with any companies on which we express a view on this call and discussions today. These disclosures are available at www.ubs.com/disclosures. Alternatively, please reach out to us and we can provide them to you after this meeting and call.

So with that out of the way, I also want to just point out that we will have some time to take questions from the room here. And if anyone on the line has any questions, they can email the questions to me, steven.fisher@ubs.com and we will try and address your questions as we go along.

So now, just to kick off here. I thought if we could just ask both of you gentlemen to give us kind of an overview, a very brief overview, of your businesses including what parts of the water market that you serve since that is the meeting today, how you kind of define the market, and how you serve it. I'll hand it over to Greg.

Greg McIntyre Okay. Again, for the people on the phone, this is Greg McIntyre. So I think you know Jacobs is a professional services company. We provide technical, scientific, engineering, construction, and program management services to industrial, commercial, and state and local government, government clients. Jacobs today is an approximately $12 billion revenue company with a workforce of about 50,000 people.

In terms of the water market, we provide services globally, so we look at the water market first as who are the big global consumers of water. The biggest consumer of course being agriculture followed by industrial and energy and then local government, but that's not who spends the most money. So we're really focused on the industrial and on the municipal local government market.

When we look at those markets and you look at the capex and opex spending, about 20% of that spend is equipment and chemicals. That's not what we do. So we're not an equipment provider. We don't sell chemicals. We're really focused on the rest of the capex and opex spending. So that's what we're focused on. We're very strong in all parts of the water cycle from supply, order, treatment distribution, waste water treatment, reuse, and all those areas.

Walter Lynch Great. Thank you. Walter Lynch. I'm a Chief Operating Officer in American Water. Great to be here, so thanks for the invitation.

Just briefly on American Water, we're the largest publically traded water and waste water company in the United States. We have 7,100 employees who provide service both on a market-based business and a regulated business.

Our regulated business operates in 16 states. We serve 1,600 communities and a population of 12 million. We own a significant amount of assets, including 81 surface water treatment plants, about 80 dams, 125 different waste water facilities, and we have 50,000 miles of mains and collection pipes.

Our regulated business provides about 90% of the operating revenues for American Water. And our top two states, New Jersey and Pennsylvania, comprise almost half of our operating revenues. And our top selling states account for about 88%.

Our market-based business consists primarily of three businesses: Military Services Group, where we provide water and waste water services for 14 different military bases in the United States; we have a Homeowner Services business that provides a warranty service for primarily the water and sewer lines on people's properties that are not protected by or covered by homeowner insurance; and then we have a Keystone business that provides water to some of the drillers in the Appalachian basin.

Every day, and we're proud of this, we deliver about 1 billion gallons of treated water to our customers across our footprint. So, great to be here. Thanks.

Steve Fisher Thank you.

Rose-Lynn Armstrong Thank you. So, since the topic of the panel today is discussing the challenges and opportunities in water, why don't we jump right in? And a question for each of you is, what are some of the new challenges facing the water market?

Walter Lynch Okay, let me take that. It's Walter. I'll go first. Well it's a new challenge, and it's been an existing challenge, but the first and foremost challenge that we have is the water infrastructure. And as you know, there's significant need to invest in our water and waste water industry across the United States, so I'll address that. I think we have water quality challenges that have emerged. And then customer expectations are changing in the business. So I'll focus on those three.

Let me start with the infrastructure and the challenge to continue to replace infrastructure. Let me give you a quick overview on the water and waste water industry in the United States. So there are 1 million miles of pipes in the United States, and we have a major main break every two minutes, which is amazing when you think about it. So we lose about 2 trillion gallons of treated water every year at a cost of $2.6 billion. That's about 20% of all treated water.

On the waste water side, 800,000 miles of collection pipes, many of them were put in years ago. They're posing a risk to groundwater. And every year 900 billion gallons of untreated sewage is discharged into our rivers and streams. Forty-four percent of all that pipe is classified as poor, very poor, or likely to collapse. That's up from just 10% in the 1980s. So it just shows the lack of investment in our infrastructure.

And one more fact, the American Society of Civil Engineers gave the water and waste water infrastructure a D and a D+ rating, which is the lowest of any infrastructure in the United States, so significant investment is needed. That's an old challenge but it continues to be the challenge as an industry we need to address.

Let me focus on water quality. And as you know, there's been a lot of press recently about what happened in Flint, Michigan as far as lead contamination, and also on the PFOA [Perfluorooctanoic acid] and PFOS [Perfluorooctanesulfonic acid] issues throughout the United States. There are 50 million registered chemicals in the United States, and it took 33 years to identify the first 30 million. It's taken only nine months to identify the last ten million chemicals, and every 2.6 seconds a new compound is formed.

As far as emerging contaminants, and we're talking about PFOA, it's a big issue facing this country. And as you know, PFOAs have been in existence and been used since the 1940s in various capacities—in a lot of the things that we do every day as far as nonstick cookware, stain resistant clothing, and also it's been used on military bases for firefighting—so it has penetrated our water system. And as far as an emerging contaminant the EPA has not identified it as an MCL [maximum contaminant level] yet. They've given it a health advisory of 70 parts per trillion. Some of the states have been even more stringent, getting it below that. New Jersey's at 14 parts per trillion. So we continue to address that and other emerging contaminants that are in our water. And our group at American Water, we have 15 scientists that work very cooperatively with the EPA and other agencies to test and to look at these emerging contaminants so that we're doing the right thing for the long-term and our customers.

And lastly, around customer expectations. We like to say at American Water and we believe that if our customers had a choice they would choose us. We are really focused on improving our customer experience and we've done that by asking our customers, "What do you want from American Water and how do we provide the best possible service for you?" We've aligned our technologies with our people and our processes to do that.

When our customers look at us, they're not looking and comparing us to other utilities; they're comparing us to all the companies they deal with every day, Amazon and all the other high tech companies, and they're asking, "Why can't you provide that same level of service?" That's what we're geared towards and that's what we're working towards – meeting our customers' expectations.

Greg McIntyre — First of all, agree 100% with Walter. So aging infrastructure is a big issue, emerging contaminants are a big issue. The only thing that I'd add to the emerging contaminants is we're finally seeing some states actually start to issue investigative reports. California came out, I think it was March or April, really driving investigations around obviously aviation/airports, landfills, water, waste water. So that's actually going to really pick up pace.

I think what I think the new challenge is, I'd like to go maybe to a bigger global perspective is a lot of the drivers out there they've been there a long time. I'll just call them traditional drivers, so aging infrastructure, population growth, urbanization. To me, I think a big thing moving the water market right now is just the whole climate change-induced wet weather events. Right? There's too much water or too little water, and that's happening around the world constantly. You can't look at the news in any particular day and see somebody being flooded or another drought emerging. So, I think that's a big driver and that's driving a lot of our clients to focus on resiliency, resilience of their infrastructure.

Obviously a lot of that is focused around coastal cities. We have big programs going on with Miami Beach and Jacksonville and New York and London and San Francisco. But it's also inland cities, because they're also effected by flooding. A big example is we're working on the Fargo Moorhead, diversion of the Red River around the city during times of flooding. So, I think a big new challenge is around resiliency and that's a big thing for our clients.

Steve Fisher — Okay.

Walter Lynch — I'd actually like to add in there, it's a big issue for the water industry as well. We've done a number of things to improve our resiliency across our systems and down in New Jersey we have a water treatment plant that serves about a million people in Central New Jersey. We put a floodwall around that plant about 20 years ago to meet the 100 year flood requirements and we've been probably an inch from having that plant flooded on a few occasions. As you know, we're having many, many more of these severe storms. So we just spent $65 million raising that flood wall another couple feet to meet a 500 year storm. That's what we're doing around our system. I know all the other water providers are doing the same thing because we just can't afford to have any plants jeopardized and out of service because our customers are relying on us. And again, in that case one million people are relying on that plant to provide water every day.

Steve Fisher — What's interesting is it sounds like some of the challenges have been around a long time. Maybe you guys can talk about what is disruptive in these water markets and where's the most opportunity to have innovative solutions to address these challenges?

Greg McIntyre — I guess one area, and I'm sure Walter will jump in on this one, is around digital solutions. For us that's just creating digitally-enabled process systems and to help really get more operational efficiency out of infrastructure. So I know Walter as a client would be looking at that. And also to prevent failure. So a lot of focus on using artificial

intelligence, using the data to do predictive maintenance to get ahead of failures. So I think digital solutions is a big issue.

I wasn't there, but our team just participated in a conference with 40 CIO's of water utility plants and their big focus in this area was more on the internet of things in the water distribution system, so systems that are on the edge. And then, again, using that data to really help drive efficiency and operations in their systems.

But it's interesting, that creates new opportunities, because now it's what do you do with all this data that you're collecting. Most owners and clients aren't prepared to deal with all that data, so that creates opportunities. And then another opportunity is how you protect that data, so cyber security of all that data you're collecting. So those are kind of some big areas that I think are just ripe for innovation in the industry, whether you're a service provider or owner of the asset.

Walter Lynch — Absolutely. On our side, too, we're looking at how technology can enhance not just the efficiencies, but the services that we're providing. One of the things that we're doing is putting advanced water quality sensors up river from our 81 different service water treatment plants so they can detect a broader scope of contaminants and get that information back to our water treatment plants so they can prepare in treating those contaminants. And also, as the regulations evolve, we're going to have to be treating for a lot more of these contaminants, so having that information has been extremely valuable to us.

I think another thing we're doing is we're looking at different technologies in this space. A chip in a pipe, we're experimenting with putting chips in pipes to really test the integrity of that pipe, and understanding that that pipe will break at some point. But as we listen to it, we'll be able to identify where leaks are going to happen and where main breaks could possibly happen and get in there proactively and replace those pipes. So those are a couple of things that we're doing as a business.

And also, we're looking at meter optimization, using machine learning, listening to our meters so we can identify what issues are out there that we can address proactively. If there's a leak, if there's continuous running; if there's just anything else that we can identify by listening to our meters, that's some of the advanced AI and machine learning that we're deploying at American Water.

Steve Fisher — That was actually going to be my next question about digital solutions. So maybe to follow up on that and take it to the next level, where do you think we are in the adoption phase of some of these new technologies and digitalization? It sounds like it could be very impactful for operational efficiency and detection. Where are we in this process? I imagine it's still quite early.

Greg McIntyre — Yes, I'd say very early. I mean, looking back, we have some clients that are early adopters, clients that really want to push the envelope, so I think some of these opportunities started emerging maybe five years ago. Now, you're just seeing – I can just respond by saying just look at the

sheer number of proposals and RFP activity in our pipeline around smart cities, smart water systems, so it's really gaining, but I think it's still very early.

Again, that's just getting the internet sensors out there, connecting to the wireless technology. We haven't even begun to penetrate how you manage all that data and how you can come up with new solutions with that data.

Walter Lynch — We're in the early stages and we have a technology innovation group. We've hired a number of people, Ph.D.'s with machine learning and AI background that are helping us understand how to leverage the information to providing better service and drive efficiencies in the business. We have a long way to go, but we're very geared towards improving our customer experience, driving operational efficiencies, which helps us continue to invest in our infrastructure and minimize customer impacts. That's been the focus of our AI group.

Steve Fisher — Maybe just a follow up to Greg. Specifically, as you think about how you're operating in a competitive space, what can you guys do to enhance your competitive positioning to help your customers as the innovation and technology landscape changes out there?

Greg Lynch — Maybe sticking with the digital theme, one of the things that Jacob's does, and it really came with the CH2M acquisition, heavy investment in technology and innovation. We've been investing for as long as I can remember at CH2M and building a robust technology organization with leaders in the technologies, global subject matter experts. So invest in the organization and then partner with clients to look for ways to deploy and pilot these innovations early on so we can be an early adapter and learn from that and continue to evolve with the market.

Steve Fisher — Okay.

Rose-Lynn Armstrong — Walter, how do you see the industry structure changing and what is the impact of consolidation in the industry?

Walter Lynch — Let me give you a quick landscape of the water and waste water industry. So, there are 51,000 community water systems and 17,000 community waste water systems, so highly fragmented. Compare that to the electric and gas that have 2,000 and 3,000 systems across the country.

On the water side, it's amazing. Of the 51,000, 83% of those systems serve a population of 3300 or less. Ninety-two percent serve a population of 10,000 or less. So highly fragmented.

On the waste water side, a lot of those systems were put in with free federal money back in the '70s. There's an incredible need to invest in those systems, so consolidation is there in front of us. We spent a lot of time earlier with many of you talking about our approach to consolidation. There's just tremendous need. Eighty-four percent of the US population is served by a municipal water system; 98% of the waste water.

So, we see that landscape changing over time as we continue to provide value. For us at American Water, we've been buying waste water systems in areas where we serve water customers. That's been a natural for us. We're already in the community, we already have the relationships, we already have the buildings, so buying those waste water systems in areas where we serve water customers has been a tremendous opportunity for us. We bought the McKeesport Waste Water in Pennsylvania. We're going to close on Alton Illinois Waste Water System. So it's just been a great thing for us to focus on the waste water in areas where we serve water customers, and we're going to continue to focus on that.

But I think as an industry, we add just tremendous value to the communities that we provide service for. When we acquire new systems, we integrate them into what we do. And for many of us it's all we do. We've been doing this for 130 years. The economies of scale that we can bring, the purchasing power, the access to capital and the access to tremendous expertise give us really a great foundation to buy and integrate the systems. So, we're going to continue to consolidate and there's tremendous opportunities in the water space to do that.

Greg McIntyre

Maybe just to add to that. The other couple things we see is we see a lot of our clients really organize, changing the way they're organized to focus on water as just one integrated resource. So ten years ago, people were at the water department, waste water department, a storm water department. Now everybody's focused on one integrated water and treating the resource as a valuable integrated resource. So that's something we see.

You also see a lot of these clients rebranding themselves. They're no longer the waste water department. They're the clean water department.

Then from consolidation, obviously I'll come at it from the perspective of a professional services company, lots of consolidation in the industry, but from my perspective it's nothing new. It's been going on for 15-20 years. I think the pace certainly has increased in the last five years, and I would expect the pace to continue to go on with more and more consolidation because of how fragmented the market is, and that includes how fragmented the professional service providers are as well. Lots of opportunity for consolidation.

Walter Lynch

And there are a lot of municipalities that are facing a lot of challenges, including fiscal challenges, pension obligations, contamination issues, and it's hard for them to do it on their own – to raise the capital, have the expertise to deal with the situations. That's why for us, in this space, having a significant investment into the states and big customer base and tremendous expertise, to be able to buy those systems, integrate them into what we do just makes great sense.

And I think that's why you're seeing a lot of legislation across the country, particularly fair market value legislation. That enables us to pay an appraised value, a fair market value for the system, and then get back into rate base and that's how we earn on that rate base and pay the city a fair value for this system. Before that legislation it was hard to

consolidate the industry because it was difficult for us to pay what they wanted to pay and then get that in their rate base. It works for everybody and that's why you're seeing in ten states across the United States that fair market value legislation.

Rose-Lynn Armstrong Will water quality be another sort of driver of consolidation as well, emerging contaminants and such?

Walter Lynch Absolutely. Getting back to Flint, Michigan, that has caused a lot of communities to call us because they don't want to be in a similar circumstance. If you look at New Jersey where the Water Quality Accountability Act originated, that was a discussion we had with Senator Sweeney because he wanted to make sure that everyone was held to the same standard in New Jersey. That levels the playing field between the investor rounds, the private sector and the municipal sector. So from asset management plans, the cyber security programs, through how you respond to notices of violation, and even your replacement rate on pipe, the average across the United States right now is a 250 year replacement rate. This mandate is 150 year replacement rate.

There's an implementation process and the mayors are implementing according to this process and submitting the reports into the state. The state is getting those and evaluating them, but it's causing a lot of municipalities to call us and say, "We want to talk to you about possible consolidation."

That legislation has also gotten to Indiana, Indiana Water Commitment, and many other states are looking at similar legislation with the goal of making sure that the water within their states is safe to drink and it is reliable and affordable.

Steve Fisher Building on that, regulation was going to be our next topic of discussion, so you touched a little bit at the beginning about contaminants and now you're talking a little further about it. Anything else that we should consider from the regulatory front? I know there's been EPA discussion about copper rules. I'm not sure where that stands. Anything that you guys are seeing out there that would drive from a, you're talking about consolidation now as a driver, but how about regulation driving capital spending or opex?

Greg McIntyre Okay. Maybe you can talk about lead and copper because I know how important that is to you.

I come at it at a different angle. I think the big driver for us in the market is not anything federal, it's the state and regional, local regulations. So I'll give you some examples, because I think people miss that picture.

So, right now in Florida there's big legislation about outlawing ocean outfall. So that's driving programs, a lot of the waste water treatment plants used to discharge into the ocean – still do, right – and they need to get off the ocean outfall by 2024. That's creating big programs for some of the big cities down there, particularly Miami Dade.

Going inland, Texas, big driver for water treatment facilities in Texas is you have to get off the groundwater and go to surface water because we've over pumped the groundwater to the point where there's land subsidence. So that's a huge driver for all the regional spending in and around Houston and driving some big projects that actually are going, because of the need for speed, going out on a design/build basis.

So California always has lots of their own state regulations, a lot of focus on reuse there and reusing the waste water. I think don't just look at the federal regs. For our market you have to be down at the state and local level and see where there's regulatory drivers.

Walter Lynch — I'll jump in on the lead and copper. All municipalities, all water providers test for lead and copper. At American Water, we're in compliance with it. We really treat through corrosion inhibitors and that keeps the lead, if there is lead in the pipes, it doesn't leach into the water.

I think what happened in Flint is they decided not to put the corrosion inhibitors in there and they changed the water source. That all contributed to lead getting into the water. At American Water, we have about 120,000 lead service lines out of 3.4 million. But again, because we treat properly, it's not an issue for us.

But what we're doing is working with the commissions that we're going to be replacing those 120,000 lead service lines over the next 10 years, they're in about 8 states, and we work with the commission to get recovery not just to do our side, but to do the customer side lead service line, because there's a lot of evidence out there if you just replace your side, you're disrupting and could cause lead to get into the water. So, again, we're working with the commissions getting favorable treatment on getting recovery on both, even though we don't own that, the customer still owns that, but we're doing it in the best interest of the customer. So over the next ten years we'll be replacing all our lead service lines. But it is a big issue for the industry and Flint really brought it to light.

Rose-Lynn Armstrong — So switching gears a little bit, let's talk a little bit about capex now and capital spending. Where are we in the cycle and what do you see as the biggest drivers of spending going forward? And where do you think we'll be two or three years down the road?

Greg McIntyre — I'll start. So on capex/opex, I think a couple things. We provide services to clients around the world, so we don't look at it as just the US market. I think it's important, particularly for you guys, the investors, to know the market doesn't operate in harmony around the world and in this cycle. There's always hot markets and not so hot markets.

What we see globally right now is Australia on a strong comeback after being in a low cycle. They tend to go spend money around their drought cycle.

Singapore is always very strong because of their long-term vision and their governance model to be water independent.

The Middle East, particularly the King of Saudi Arabia right now is very strong.

UK has been going through their amp cycles [asset management plan], people familiar with the amp cycles, so they've been in a lull. But I think the next amp cycle will be ramping up.

In the North American market, I still think we're in the early part of a long-term capex spending for all the reasons that we both talked about in terms of market drivers. I know, because I've had some individual assessments with you, lots of questions about what happens when the economy goes south, I think in our industry as a professional service provider, we're kind of late cycle. We usually see a couple year, two to three year lag at the end of an economic cycle. Because of all the way our municipal clients procure their work, those projects are in the pipeline, they're bonded, they're funded and we're often working on many of them. So we have a nice tail, a nice lag when an economic downturn does occur. And I can't predict when that's going to occur.

Walter Lynch

I'll speak to our company in the United States. As I said before, the water and waste water infrastructure is in dire need of investment. We continue to invest more than we've ever invested in our company. So over the next five years, we're going to be investing like $8 billion to $8.6 billion in our infrastructure; $7.3 billion will be in the systems that we own. We have money set aside for acquisitions, but $7.3 billion over the next five years to address a lot of the issues that I was talking about. We're going to replace about 2,000 miles of our mains out of the 50,000; we're going to be upgrading 130 different water and waste water treatment plants. So that continued investment is necessary.

Talk about resiliency, we have 50 projects across our company to improve the resilience of our assets. That's a big focus for us and that's about 9%.

Then water quality is another 8% to 9%. Then we have technology and operational efficiency. So again, leveraging the technology to improve the customer experience, but also drive operational efficiencies in the business.

I think as we continue to invest in our infrastructure, for our company and for our industry it's very important to mitigate customer bill impacts. So our focus has been on O&M efficiency, and one of the things we're doing is leveraging technology to continue to drive that O&M efficiency down. We established a goal of 31.5% by 2023. Right now it's about 35.5%, but we've shown continued progress in that. Again, that mitigates customer bill impact. For every dollar that we take out of the business, we can invest $8 back into the business with no customer bill impact. So that's a necessary part of our formula and we've been focused on it since 2010 and we're going to continue to focus on it.

So, continued investment is necessary. Pipes, upgrading water and waste water treatment plants, resiliency efforts, water quality, and then operational and technological efficiency is really the biggest areas that we've been spending.

Greg McIntyre We like to hear that.

Steve Fisher I don't know if you know this off the top of your head, but the $7.3 billion over the next five years, any sense of what that number was in aggregate over the prior five years?

Walter Lynch I'll put it this way, $1.6 billion is what we're going to spend this year. We're averaging about $1.5 billion a year. I would say ten years ago it was $500 million we were investing on an annual basis. We've tripled our investment.

Again, the only way we could have done that was to bring our cost structure in line and bring our own end cost out, because that's the key governor for us is, what's the impact on customer bills? So we've tripled our investment, we've improved our replacement rate, we've put in a lot of new facilities, we're upgrading existing water and waste water treatment facilities. The needs are there and I think you'll find from everybody in this room that's in the water industry, the needs are there. How you do it, how you do it most effectively and how you mitigate customer bill impact is really the key.

Rose-Lynn Armstrong So, how are the funding sources evolving for water projects?

Walter Lynch Well, for us in American Water, we're seeing a lot more ESG investors and I think that's because ESG is getting bigger and bigger, and there's been a real focus on the water market. So we're seeing a lot more from that from the equity side.

Then we're also, if you look at WIFIA [Water Infrastructure Finance and Innovation Act] in 2014, long-term, low interest financing, we were getting financing through WIFIA on two big projects in Missouri – a water supply reservoir that we're putting in Joplin and also our lead replacement program in our St. Louis County. So, we've qualified for that. We love to use these programs, because again, the lower interest, the lower cost to our customers, the more we can invest without minimized customer bill impact.

Rose-Lynn Armstrong Does that blunt some of the consolidation opportunities because municipalities have access to that? Or is it maybe just too small to make a difference?

Greg McIntyre It helps the municipalities, but I think it's too small to make a difference.

Walter Lynch I agree. They're facing a lot of challenges. This helps them, but still doesn't mitigate their issues.

Greg McIntyre From our perspective, obviously when I think of funding sources, it's the rate payers. So North America, it's the rate payers provide the funding. And I agree with Walter, there's access to state revolving loan funds and WIFIA money, but it's really the rate payer.

Now outside of North America, completely different. A lot of the work we do are national government funded projects or programs are at least

subsidized by governments in some of the markets. Of course the UK being very similar to the US, it's all rate payer based.

So, it gets back down to, how do you do all these capital projects and invest in infrastructure while trying to minimize the impact on the rate payer. Obviously in the recent years, the market is very strong. When the economy is strong, let's face it, there's political will for people to raise rates. Right? And when there's political will, the politicians will to go out there and help sell a rate increase.

You're different being investor owned, but you still have to go sell that rate increase.

Walter Lynch — We do. We do studies in each of our states. I mean, economic conditions, what we think the latitude is as far as price increases, and that's why we've upped our capital because on a state by state basis, we thought that our customers, given the economic conditions and where we are, could weather a 3% to 3.25% increase a year versus something less than that in prior years.

So it is tied to the economy, it's tied to a number of factors including the political will. But first and foremost, we want to make sure we're providing the service that our customers expect.

Steve Fisher — What about public/private partnerships? Do you have anywhere in your businesses making any inroads?

Greg McIntyre — Yes. So on P3, again, depending on where you are around the world, so I'll start in the US, we're still very immature in the P3 market. P3 market takes investible projects that the risk is well understood and distributed, and there's no framework in the United States to drive that, broad framework, so every P3 is an individual on-off P3.

The Red River project I mentioned in Fargo, that's a great example of a P3. It was the first Corps. of Engineers P3 and they partnered up with the Fargo Moorhead, and that process going forward, that's a $2 billion P3 activity. So there are examples, but I will tell you, the ones that we've been involved in, they're complex and they could take five years to develop a P3 to the point that investors can understand the risk and invest in it. So it's moving very slowly in the United States, I'd say.

Canadian market, more mature, federal framework. Feds will fund 25% of your water infrastructure capital spend if you follow their very prescriptive model and go for a P3 process. So much more mature market.

Walter Lynch — We agree at American Water, too. We had a contract services business that were on partnerships. We decided to sell that business not long ago and focus on our military and homeowners as the market based businesses just because of the issues that you raised, then acquiring systems within our footprint and that's the way we're doing it at American Water.

Steve Fisher — A question here, given where we are in the broad economic cycle, access to labor seems to be a challenge for many different industries. Curious how you guys are seeing really the, how much of the labor constraint is a factor for your business or your industry in general?

Greg McIntyre — Absolutely, labor in today's market is a constraint, whether you're in professional services or I'm sure the same thing, it's exacerbated by the aging workforce. Right? I think we all face that as well and how do you capture that knowledge from that aging workforce. So definitely it's a constraint. So we're constantly focused on recruiting and retention for our workforce.

I think the longer term, this all gets back to STEM education and how many engineers are going to be available in the workforce. That's where we're really building global integrated delivery, so we have a lot of our global design centers are offshore and CH built one in Krakow, Poland, Jacobs has a very large one in India. So we're using a global integrated delivery to help deal with some labor shortages, particularly in the overseas market. We think that will bode well for the long-term.

Walter Lynch — Yes, and right on there, too, aging workforce in the utility sector is an issue we're all dealing with. I think the latest statistic is at 30% of our employees could retire in the next three to five years. So we're working hard at recruiting military, recruiting in community colleges and other disciplines to bring those folks into the business, and then having the knowledge transfer. That's absolutely critical and we're doing it through sharing of the knowledge through technology primarily, and making sure we have everything recorded and documented. So it's a big issue for the utility sector and the water sector and we continue to address that.

Steve Fisher — Anyone in the audience have any questions at this point? Okay. On the phone? Maybe I'll just ask one more here. One of the things that you guys have talked about, I'm certainly going off script here but I thought it was really neat at your Investor Day you talked about the digital twin. Maybe you can just talk about how you're incorporating that as a service offering and helping your customers.

Greg McIntyre — So digital twin is just a digital replica of a physical asset, so it fits under the digital solutions umbrella. So sometimes we can go into an existing physical asset, create a digital replica and that way you can take operating data and run multiple simulations with scenarios to look at how you can maybe optimize performance or prevent failure of equipment. I'll give you a couple of examples, and there's a boatload of them.

One of the projects we did in Pima County, Arizona, we designed, built and operate this plant, so we have access to our 3D model when we designed it, we have all the operating data, and we now can take that operating data, put it into the digital twin and do artificial intelligence to really come up with predictive maintenance and failure rates on blowers and pieces of equipment like that. Since we're the operator, it can outsource to operations, we don't own the asset, but that helps us stay in front of the curve and how we can improve the performance in operations for Pima County. That's a plant example.

In Cincinnati, a great example, they have a big combined storage overflow program under consent decree. Again, made a digital replica, took all of the operating data to help show them how their program really performed during major rain events and where to prioritize and maybe eliminate capital projects. We saved them probably $300 million in their capital program by doing it. So, it's becoming a more and more common and use of digital twin.

Now when we're doing a new plant design, we're doing a big project in Singapore, we'll build that digital twin as we're doing the design so it's ready to go and clients can start utilizing it.

Steve Fisher — Great. We appreciate your participation in the panel. Thanks for joining us.

Walter Lynch — Thanks, everyone.

Greg McIntyre — Thanks.