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INNOVATIVE FINANCING AND FUNDING: ADDRESSING AMERICA'S CRUMBLING
WATER INFRASTRUCTURE

THURSDAY, JULY 20, 2017

U.S. SENATE

Committee on Environment and Public Works

Subcommittee on Fisheries, Water and Wildlife

Washington, D.C.

The subcommittee met, pursuant to notice, at 10:02 a.m. in room 406, Dirksen Senate Building, the Honorable John Boozman [chairman of the subcommittee] presiding.

Present: Senators Boozman, Inhofe, Fischer, Rounds, Sullivan, Duckworth, Cardin, Whitehouse, Gillibrand, and Booker.

STATEMENT OF THE HONORABLE JOHN BOOZMAN, A UNITED STATES SENATOR
FROM THE STATE OF ARKANSAS

Senator Boozman. I call this hearing of the Subcommittee on Fisheries, Water and Wildlife to order.

We are here today to discuss innovative financing and funding to address America's deficient water infrastructure. The purpose of this hearing is simple. Today, we will be discussing America's current approach towards drinking water and wastewater infrastructure investment.

Many members of this committee, including myself, often reference the American Society of Civil Engineers' Infrastructure Report Card. Currently, the ASCE grades America's drinking water infrastructure with a D. Wastewater has a slightly better grade, a D+. That reminds some of us of our grades in school.

This is not a rural or big city problem. It is not a Republican or Democrat problem. This is a national emergency and we need to find solutions before it is too late. It is one thing to see these terrible grades on paper, but what does this actually mean for people in their day-to-day lives?

Usually, when we imagine life without clean and efficient drinking water and wastewater, we picture communities that do not resemble our own. We picture far off countries that do not have all the blessings of America. Sadly, this could not be

further from the truth.

Currently, an estimated 1.7 million Americans live without access to clean, running, drinking water in their homes. There are tremendous infrastructure needs in rural America. The estimated cost to provide improved rural drinking water facilities totals more than \$60 billion, with the needs of water systems in American Indian and Alaska Native villages accounting for \$3.3 billion alone.

We are in a position to address this problem. We have an Administration that has made infrastructure investment a top priority. Coupled with the bipartisan support in both the Senate and the House, we have an incredible opportunity to work across the aisle and get back on track to making America's water infrastructure the best in the world.

While we all agree that infrastructure investment is a necessity, this hearing will look at common-sense approaches, along with new ideas, to fund these important projects so we can give the American people that basic service they desperately need and deserve.

A popular funding strategy at the moment is the public-private partnership or the P3. P3s are a crucial component of the Administration's proposal and are necessary to get to the \$1 trillion investment in infrastructure that the plan promises.

While P3s are a great way to fund certain projects, it is

not a magic cure for all. P3s are a great tool in our toolbox, however, it is important to realize that P3s do not always work in small, rural States such as Arkansas.

That being said, a combination of innovative financing, private investment, along with State and federal funding, such as loans and grants, is a good way to address the problem. The problem will not be solved with a one size fits all approach. We will have to use every funding and financing mechanism at our disposal, while give communities the tools to help themselves to fix the problem.

For a moment, let us picture a small community in rural Arkansas that is actively trying to update an aging and deficient wastewater system. This community has a small tax base, meaning any infrastructure improvements needed would make the cost of the utility simply unaffordable.

A community like the one I have described has few options to fund such a project. They could look to the Water Infrastructure Finance and Innovation Act, the WIFIA Program, which provides low interest treasury rates to finance water projects, but this project is not likely large enough to receive any assistance.

Larger communities using WIFIA to fund large scale projects will free up the State Revolving Fund, the SRF, for smaller communities. The Clean Water State Revolving Fund and the

Drinking Water State Revolving Fund provide funding assistance to repair, replace or expand wastewater and drinking water treatment systems consistent with the requirements of the Clean Water Act and the Safe Drinking Water Act.

This community could also fund the project with tax free municipal bonds. Since 1913, bond interest earnings have been exempt from federal income tax leading investors to offer low borrowing rates to communities. In 2016 alone, communities issued nearly \$38 billion in municipal bonds to pay for water infrastructure projects, translating into millions of dollars in savings for local water rate payers.

Lastly, the small community I am describing could look to the Federal Government, along with their State government, for assistance. There are a multitude of grants available to communities to help them help themselves.

As you can see, we have many tools at our disposal. The trick is finding what works for each community rather than a one size fits all. What works in Rogers Arkansas might not work in Chicago Illinois. Nonetheless, we have the ability to fund important projects across the Country.

The time to act is now. We have an incredible opportunity to develop an infrastructure bill that directly addresses America's drinking water and wastewater infrastructure challenges.

I want to thank our witnesses today for attending today's hearing. I look forward to hearing real world examples of the problems average Americans are facing. I am interested in seeing what kind of commonsense solutions we can all agree upon.

Now, I will turn to our Ranking Member, Senator Duckworth.

[The prepared statement of Senator Boozman follows:]

STATEMENT OF THE HONORABLE TAMMY DUCKWORTH, A UNITED STATES
SENATOR FROM THE STATE OF ILLINOIS

Senator Duckworth. Thank you, Mr. Chairman.

I want to apologize, I have a terrible cold. Yesterday, I sounded like Chewbacca. Today, I sound like a boy going through puberty. My voice continues to crack. I am hoping to get to Kathleen Turner tomorrow. Today, it is not so sexy.

I want to thank the Chairman for convening today's hearing. I want to thank all of our witnesses for participating in this very important conversation.

Last week, Ranking Member Carper and I organized a roundtable discussion to highlight some of our most pressing drinking water and wastewater challenges. We discussed 90-plus contaminants that EPA currently monitors, including toxins like lead, mercury and arsenic.

We discussed our most vulnerable populations like young children, pregnant mothers and the elderly, whose exposure to toxins in our water systems can alter the trajectory of their lives.

We also talked about our Nation's water infrastructure, mostly built in the early to mid-twentieth century with an average life span of 75 years and the growing backlog of need in communities across Illinois and elsewhere.

According to the American Water Works Association,

replacing failing or outdated drinking water systems and expanding capacity to match population growth will cost at least \$1 trillion over the next 25 years.

The American Society of Civil Engineers, as my Chairman mentioned, highlights \$271 billion in wastewater infrastructure needs with \$56 million more people connecting to treatment plants by 2032.

We are now a full six months into the Trump Administration and we still have not seen any meaningful details about the President's infrastructure plan. Despite a lot of Campion-style rhetoric about the need to invest in our infrastructure, the President's fiscal year 2018 budget provides a net loss, a loss, of roughly \$144 billion across all modes.

The President maintains funding for the State revolving funds but eliminates USDA Rural Development Program and slashes EPA's budget by 31 percent.

Just last night, the White House announced the establishment of a presidential Advisory Council on Infrastructure housed in the Department of Commerce to make recommendations to the President regarding funding, support and delivery of infrastructure projects across all modes. A report on the advisory council's findings is due sometime before December 31, 2018. If confusion and delay is the President's goal, mission accomplished.

Our goal is to enhance safety, protect public health and create jobs. Personally, I would like to advance those goals and put people back to work sooner than later. Our infrastructure needs are massive and our communities face daunting investment challenges to guarantee that what most of us take for granted, clean, safe, healthy water when we turn on the tap.

We are here today to better understand the funding and financing challenges and to work to identify bipartisan solutions. Whether it be tax exempt municipal bonds, public-private partnerships, WIFIA or State revolving funds, I am firm believer in having the right tools for the job.

Today's hearing focuses on the efficacy of the tools available to our communities and to identify the gaps where new tools may be needed or existing tools need to be modified. Each provides communities with opportunities to address their water infrastructure needs and each need to be thoughtfully considered in their context.

Again, I thank the witnesses for their participation in this conversation. I look forward to listening to your testimony.

Thank you, Mr. Chairman.

[The prepared statement of Senator Duckworth follows.]

Senator Boozman. Thank you very much, Senator Duckworth.

I am going to introduce Mr. Frazee, who is from Arkansas, and then go to Senator Booker. He will make an introduction also.

Mr. Frazee moved in 1990 to be closer to his family and was in a situation where he did not have running water. In 2014, Mr. Frazee's mother contacted my office and we discussed the problems the family was facing. After talking to Mrs. Frazee, I put her in touch with the Water Systems Council which was able to drill wells that brought fresh, reliable drinking water directly to the home as well as the homes of their neighbors.

As many of you know, this subcommittee hearing was originally supposed to take place on June 20, but due to scheduling conflicts, we had to cancel at the last minute. Unfortunately for Mr. and Mrs. Frazee, they were already on a plane flying to D.C. by the time the hearing was officially canceled. Luckily for me, and I think luckily for us, I had the opportunity to speak with Mr. Frazee in my office about what his family and community went through and how their lives had changed since receiving running water.

Most people who had just gotten reliable and affordable drinking water would forget about the problem and go on with their lives, but not Mr. Frazee. To this day, Mr. Frazee is still getting the word out to everyone who is hauling water in

their community. He told me whenever he sees someone hauling water, he stops and tells them about the available options for assistance.

Mr. Frazee, I would personally like to thank you and your family for everything you have done for the area. I would like to especially thank your wife, Jenny, who was nice enough to travel to D.C. again to watch you testify.

Given your personal experience, these are the kinds of stories we need to get out. There is simply no substitute for it. Thank you very much for being here.

Senator Booker.

Senator Booker. First of all, I want to thank the Chairman and Ranking Member for holding this urgently needed hearing. Most people do not understand the crisis we have in the United States of America when it comes to the quality of our drinking water.

The recent Reuters article talked about over 1,000 jurisdictions in the United States of America that have more lead in their water and more lead in the blood of our children than Flint, Michigan. We are in a crisis in this Country. It is affecting the next generation, affecting our economic competitiveness, and affecting the greatest natural treasure we have, which is not oil or gas, but the genius of our kids.

I am very blessed to have a guy here who is one of the

champions in our State who is doing extraordinary work in a difficult environment, in a city and county which have had a lot of challenges with drinking water.

Andy, I want to thank you for coming here. For the record, Andy is currently the Executive Director and Chief Engineer of the Camden County Municipal Utilities Authority. Before becoming the Executive Director and Chief Engineer of the Camden County Municipal Utilities Authority in 2011, he was the Deputy Executive Director from 1996 to 2011.

For over two decades, Andy has been just an incredible public servant. He has made a reputation for himself even up to the northern counties like Essex. He is renown in his field. He has worked to rebuild and upgrade Camden County's water treatment plant, implementing really cutting edge changes including focusing on green infrastructure solutions.

He has utilized green infrastructure solutions in order to help address the other issues, including Camden's combined sewer overflow challenges. Andy and his team were able to make these impressive improvements, I think this is good news to all of us, while holding user rates steady for 17 years.

Andy currently serves on the Board of the National Association of Clean Water Agencies as the chair of the Clean Water Industry of the Future Committee and Environmental Justice and Community Service Committee. He also serves on the New

Jersey Environmental Justice Advisory Council.

I am grateful that he is here now to contribute to this committee. I always say that Washington would be a better place if more Jersey came down here.

Thank you.

Senator Boozman. Very good. Thank you.

Senator Duckworth.

Senator Duckworth. Thank you, Mr. Chairman.

I am pleased to welcome Josh Ellis, Vice President of the Metropolitan Planning Council in Chicago.

Since 1934, the Metropolitan Planning Council has worked to shape a more equitable, sustainable and prosperous Chicago land region by developing, promoting and implementing solutions for sound regional growth.

For more than a decade, Josh has been at the forefront of the MPC's urban and regional planning efforts through initiatives like Green Rivers Chicago and Transform Illinois. Josh is the leading voice in the regional conversations about storm water management and water supply management, as well as advancing meaningful surface and water infrastructure investment policy.

I greatly appreciate his willingness to join us today. I very much look forward to his testimony.

Thank you.

Senator Boozman. Mr. Frazee, you are welcome to proceed and present your testimony.

STATEMENT OF MIKE FRAZEE, RECENT PARTICIPANT IN RURAL DRINKING
WATER ASSISTANCE PROGRAM, ROGERS, ARKANSAS

Mr. Frazee. Thank you, Senator Boozman.

Good morning, Chairman Boozman, Ranking Member Duckworth
and members of the Subcommittee.

I would like to expdress mine and my mother's gratitude for
the opportunity to share our story. My name is Mike Frazee and
for most of my life, my family lived without access to safe and
reliable drinking water.

It is my hope that through telling my story and struggles
to secure safe, reliable drinking water that Congress will put
in place policies that will bring affordable drinking water to
millions of Americans who live in our Nation's rural areas.

Providing rural communities with the resources to install
wells and well systems may be the single most important form of
assistance our government can provide.

I live in rural, northwest Arkansas, an area of great
natural beauty but where access to basic services like drinking
water can be extremely difficult. Life without drinking water
can be strenuous and stressful. You are constantly worried
about how much water you have and how much water will be
consumed in simple day-to-day activities.

In my part of the world, people drive every day and
thousands of miles a year to haul water from a coin operated

water machine to their homes. If the water station is broken or there are bad weather conditions, you might have to go several days without water. Hauling water consumes many hours a week, plus tremendous wear and tear on vehicles, and has resulted in a number of deadly accidents.

My dad, who is a disabled veteran, spent much of his life hauling water to our home. My mother was constantly stressed about how much water we had. Many people in our area, veterans, disabled, single parents, are down on their luck, just trying to do right and survive. These folks cannot go to a bank and ask for loan to pay for a well. We do not have the opportunity to tap into city or rural water systems.

Many of our neighbors struggle to have water. We have seen single moms taking their children to haul water in buckets. One also worries about the quality of the water being hauled. The water station uses a sign that states, "We cannot ensure the quality of the water." How awful is that?

In 2014, our prayers for a reliable, affordable source of drinking water were answered. My mother contacted Senator Boozman, who listened to our story and took action to help our family and families like ours get drinking water. Senator Boozman arranged meetings between my mom and the Water Systems Council that resulted in the drilling of wells that brought fresh reliable drinking water directly into my mother's home and

eventually into my home and our neighbors' homes.

Wells and well systems are a God-send to rural communities like mine. We were never going to have the resources to pay for a drinking water treatment facility or run water lines many miles. However, wells proved to be a very cost-effective alternative for me and my neighbors. The Water Systems Council, through its Water Well Trust, has provided my parents, myself and families across Arkansas quality drinking water at a reasonable price, through wells.

Last year, Senator Boozman worked with Senator Cardin, thank you, Senator Cardin, to have the Water Supply Cost Savings Act enacted into law, legislation requiring the USDA and the EPA to set up clearinghouses with information on the use of wells and well systems to meet rural drinking water challenges. The Water Systems Council has proven that wells can reduce the cost of providing drinking water to many rural communities by over 75 percent.

The 2011 EPA Needs Survey estimated the shortfall in drinking water funding for small communities at \$64.5 billion dollars. We have seen in Arkansas that wells can significantly reduce the cost of providing drinking water in many small rural communities and Congress should do everything it can to promote the use of wells in these rural areas. I know first-hand the importance of safe, affordable drinking water and wells are a

part of the solution.

Thanks again to Senator Boozman and Senator Cardin for your work to bring the promise of wells and well systems to communities across rural America. I would now like to show you a brief video documenting the role that safe, affordable drinking water played in transforming the lives of my neighbors in Arkansas.

[Video shown.]

[The prepared statement of Mr. Frazee follows:]

Senator Boozman. Very good.

Mr. Kricun.

STATEMENT OF ANDREW KRICUN, EXECUTIVE DIRECTOR/CHIEF ENGINEER,
CAMDEN COUNTY MUNICIPAL UTILITIES AUTHORITY

Mr. Kricun. Thank you, Senator Boozman.

Chairman Boozman, Ranking Member Duckworth and members of the subcommittee, thank you very much for the opportunity to appear before you today.

My name is Andy Kricun and I am the Executive Director and Chief Engineer of the Camden County Municipal Utilities Authority in Camden, New Jersey. I also serve on the Board of Directors of the National Association of Clean Water Agencies, NACWA, which is a not-for-profit trade association that represents the interests of public clean water agencies nationwide.

I sincerely thank the subcommittee for holding this important hearing on America's funding shortfall for water infrastructure. As all the Senators said in their remarks, this is a very important issue for our Country.

Our agency, Camden County MUA, operates an 80 million gallon per day wastewater treatment plant in Camden City that services over 500,000 people in Camden and 36 suburban towns in southern New Jersey. We are deeply committed to our responsibility to protect the public health and the environment, as well as to being responsible stewards of our ratepayers' dollars.

Funding our extensive infrastructure is one of our greatest challenges as a utility. All clean water agencies around the Country have the same missions which are as follows. One is to protect the public health, both safe drinking water and freedom from sewage overflows and backups. Children should not have to walk through puddles of combined sewage to get to their bus tops and should not have lead in their drinking water.

Second is to protect our environment and keep America open for business because without water infrastructure, there is no opportunity for growth. Infrastructure construction and maintenance results in jobs. There are challenges but also opportunities.

In order to do this and meet our mission of protecting the environment and the public health, we have to reinvest in aging infrastructure. As Senator Duckworth said, our infrastructure is old. In Camden City, our utilities are as old as the late 19th century, over 100 years. The average life is only about 70 years, as you said.

We also need to comply with Clean Water Act rules and regulations and help support a high quality of life in our community. Our goal as a drinking water utility is not only to meet our mission of meeting our permit but also to be an anchor institution in our neighborhoods. That is an opportunity for clean water utilities. Many utilities across the Country are

stepping up to do that.

The need for greater investment in our Nation's infrastructure has already been discussed today. It is very well known. I agree with Senators Boozman and Duckworth regarding the D+ grade from the American Society of Civil Engineers. It is a very serious challenge. There is a significant infrastructure gap right now.

In addition, we in New Jersey can speak about climate history. Hurricane Sandy took place in 2012. As a result, billions of gallons of raw sewage went into the waterways of New Jersey. There is an infrastructure gap as things stand today even if the climate does not worsen.

However, as time goes on, this gap will widen because infrastructure is only aging, only getting worse and many predict the climate will worsen. Therefore, there is a significant gap today and that gap will only widen. There is a lot we have to do.

However, on the good news side, there are solutions. I will propose five solutions that clean water utilities can and want to be a part of.

First, we have to take it on ourselves and increase efficiency for our own utilities. We have to be as efficient as possible. We need to harness the private sector notion of efficiency and harness that to the public good.

Second, the State Revolving Fund has been so crucial for us in New Jersey. We are very lucky to have a robust SRF program, the New Jersey Environmental Infrastructure Trust, that has helped us with financing.

Third would be additional funding, if possible, above and beyond the existing SRF appropriation. Fourth would be additional regulatory flexibility for innovation. Last is that an affordability program for low income customers would be really helpful. Those are the five things: increased efficiency for us, additional funding, additional regulatory flexibility and affordability programs.

In our agency, we have been working very hard with regard to efficiency. We implemented an environmental management system and a very aggressive management program to improve our efficiency. We also used the State Revolving Fund to rebuild our entire waste water treatment plant and ERDA control systems to make sure we were not having an adverse impact on the residential community which is only 100 yards away.

We did all this, built our entire plan through improved efficiency and the State Revolving Fund and were able to hold our user fee for 17 years. Our user fee in 1996 was \$337 per household per year. Today, it is \$352, only \$15 a year higher in 21 years. That shows if we are given the tools, the funding from the State Revolving Fund plus our own efficiency, we can do

the job and do it in a way without adversely affecting the rates of our customers and making a positive difference for our community as well.

This could never have happened without judicious use of New Jersey's State Revolving Fund which was really critical. We could not have done it on our own. We could not have done it with only SRF. We were inefficient, we would not have been able to do it either. It is the combination of internal efficiency, plus the State Revolving Fund Program which enabled us to improve our performance and hold our rates.

Through my role as a NACWA board member, I know our situation is not unique. Clean water utilities across the Country rely very heavily on the State Revolving Fund. It is essential for us to do our mission.

We know the era of grants has passed. Federal grants would always be welcomed. The low interest State Revolving Fund is very, very helpful. In New Jersey, we are able to get interest rates at less than 1 percent.

The way this works is that if we are making improvements to our waste water treatment plant, we are lowering our operation and maintenance cost because new equipment uses lower maintenance cost and lower electricity because of newer technology. We are lowering our O&M costs, but our annual debt service is not so great because of the low interest rates and

the 30-year time frame to pay back the loan.

By borrowing the money, we are able to actually have an annual debt service that is lower than the O&M savings from the improvements. That is how we were able to improve our environmental performance, protect the public health and hold our rate steady. The help of the Federal Government and the State Revolving Funds has been essential to helping us meet our environmental and public service missions.

In addition, we are hoping there will be other opportunities for funding. As you all mentioned, the infrastructure issue is really a crisis. More financing and more funding is needed. Again, I think the State Revolving Fund is a terrific way other utilities can follow the approach we took to improve their performance and reduce their costs.

We are also very supportive of other opportunities like EPA's Water Infrastructure Financing and Innovation Act, the WIFIA Program. Tax exempt municipal bonds are important. Leveraging private investment, where appropriate, through public-private partnerships is important.

We utilized a public-private partnership to build a solar panel system array that enabled us to reduce our annual electricity costs by \$350,000 per year but also lowered our carbon footprint significantly. It provides 10 percent of our plant's electricity.

We were able to do that at no cost. The solar panels were paid for by the private investor and we pay 4.8 cents per kilowatt hour whereas before we were paying 12 cents. It is a win for the ratepayer, has more resiliency because we have the solar panels instead of relying on public electricity, and also reduces our carbon footprint.

Public-private partnerships really can be a win-win where larger utilities can share resources and financing capabilities with the private sector and also within our own sector. NACWA, the National Association of Clean Water Agencies, is working on a peer-to-peer initiative in which larger utilities with greater resources can assist utilities with lower resources and work together in a peer-to-peer effort.

We want to not only have efficiency within our own utilities individually but also within our sector to try to leverage as much as possible our own resources. In fact, the utility of Chicago is really a great leader in that peer-to-peer effort, Senator Duckworth.

Senator Booker. Andy, before the Chairman interrupts you, I do not want you to be interrupted by a non-New Jerseyan. You might want to wrap up your testimony.

Mr. Kricun. Thank you, Senator Booker.

In closing, I want to thank the subcommittee and Congress for holding this important hearing. Our clean water industry

must close our infrastructure gap for the sake of our children and future generations. We can do this work but we do need some help.

Thank you very much for holding the hearing and for the opportunity to speak before you. I look forward to any questions you may have.

[The prepared statement of Mr. Kricun follows:]

Senator Inhofe. [Presiding.] Thank you, Mr. Kricun.

So people will know what is going on, Senator Boozman had to do an emergency thing at the Appropriations Committee. He will be right back. We will see people rotating and our staffs are here.

We very much appreciate your testimony.

Mr. Ellis.

STATEMENT OF JOSH ELLIS, VICE PRESIDENT, METROPOLITAN PLANNING
COUNCIL

Mr. Ellis. Thanks for having me today. I am the Vice President of the Metropolitan Planning Council which, since 1934, has been working on urban and regional development issues in the greater Chicago region.

The greater Chicago region is certainly the City of Chicago but also seven other counties with a total of about 280 independent municipalities. The State of Illinois leads the Nation in units of government. We have about 8,000 in the State. We are not real proud to lead the Nation in that but we have a lot.

Within those municipalities in northeastern Illinois, we actually have about 400 independent water utilities. You can imagine the issues Andy and Mike described playing out in 400 different communities, some with very different demographics, very different income and economic strata. That is at the heart of several issues I will discuss today.

As Senator Boozman pointed out, we have lots of tools in the toolbox for water infrastructure financing. A lot of them work very well. Like any tool, if you use the wrong tool at the wrong time, you try to put in a screw with a tape measure, it does not work very well. The reality is instead of focusing on innovative financing, we need to figure out effective financing

first to make sure these communities are getting the tools they need.

We did a statewide survey several years ago of water utilities and their experience using the SRF. Actually, 30 percent of the respondents told us they had never heard of the SRF. That could be problem number one. Those survey responses were also very short to read. They did not know the program existed. Just awareness that the tools even exist particularly in lower income suburban communities as well as rural communities is a big issue.

There are plenty of improvements we can make to existing tools, but there is huge diversion between communities, not just in the suburbs of Chicago, but throughout the United States in practices on rate setting, how communities deal with affordability issues, financial management, accounting and asset management.

Communities like Chicago, with the staff capacity and technical know-how to employ best practices largely are doing so. Right in the City of Chicago right now, we are replacing water mains that were installed when President Roosevelt was in office, Theodore Roosevelt. In my office, I have sections of wooden pipe taken out of the ground in the last couple of years. It served us well, those trees did.

Many other communities, if they do not have the capacity

and technical know-how to use programs like SRF, are not doing these sorts of things and are falling further and further behind. It is not uncommon in our region for communities to lose 25, 30 or 40 percent of their water through leaks in their pipe system.

If every time you went home from the grocery store, 40 percent of your groceries blew out the window, if every time Mike went to fill up a tank of water, 40 percent of the water poured out on the way home, you would realize you had a problem. But that is common in our region, communities losing tremendous amounts of water from leaky pipes.

A lot of communities have no dedicated revenue stream for storm water management. In addition to water supply issues, a lot of communities fail to update their rates on any sort of regular schedule, so they fall further and further behind.

The Federal Government can do many things, whether through incentives built into SRF scoring, through grants made available through some of the SRF set aside programs, even through the basic requirements of the program to encourage full cost pricing, encourage asset management plans, and consistency in reporting and budgeting.

In my estimation, the SRF works pretty well. It is just that a lot of communities do not have access to it. Communities struggle to do some of the pre-engineering planning that you

have to do. In order to get a loan, you have to submit your infrastructure plan, your engineering plan. If you do not have the resources to do that, then you cannot get reimbursed for it and cannot do some of the preliminary work you need to do in order to apply for the program.

I am fully cognizant of the need for differences from State to State. I have lived in five different States in this Country and I get the differences between them, but there are best practices being played out in many different States, yet we have not figured out how to put them all together in one package in any one State. It might be time for some greater consistency between States-to-State use of the SRF programs now that we have figured out some things that work in these different States.

At the heart of it, with the SRF and the experience we saw in the survey that went out statewide, the SRF program, at least in Illinois, is very slow and cumbersome to use, very different than trying to go for a bond or even to a private bank for a loan.

Application times are very long and can screw up construction schedules. If you are a low income community and have to retain a private engineering consultant for 18 to 24 months over multiple construction schedules because you are not getting a response from the State on the SRF, that drives up costs and can delay your projects. This is not just an Illinois

issue.

However, for all the things we could do just to make the funding tools work better and have better access to them, I do not think the money is necessarily the fix to all of these things. An infusion of funding for cities like Chicago, Oklahoma City, Little Rock, and some of the bigger places that have the capacity to take that money in and use it for infrastructure projects, makes a lot of sense.

The point I mentioned about having 400 independent water utilities, some of which are very small, many of those communities do not have the technical capacity, the staffing or whatever to be able to receive federal funding, to be able to apply for it. The issue is governments and the fragmentation of the system. We have a handful of water sources in northeast Illinois, Lake Michigan, groundwater, river water, and yet we have 400 utilities managing these different systems. Many areas of the Country are just like this.

When every municipality has its own utility and that utility operates essentially as the public works department, a lot of the decisions that are made are wrapped up in the other political decisions that municipality has to make. If you are looking at adjusting water rates but also providing fire service, schooling and things, you have to make these decisions with all these other calculations in mind. As result, hard

choices like rate increases get delayed, infrastructure projects get delayed and you end up having 25 to 40 percent of your water dripping out your pipes.

The fragmentation compounds underlying environmental, economic and equity issues if a community, like we have in many of our suburbs across the Country, has lost the population or lost 10,000 people over the last 20, 30 or 40 years. When people move to the suburbs, they do not take pipes and pumps with them when they exit town, so you have a smaller community, often with a smaller industrial base, paying for the same infrastructure system, the same amount of pipes, the same amount of pumps and you are having to squeeze water from a stone to even pay for it.

Often rates will have to increase to pay for the system while incomes are decreasing. We have communities in Illinois, a place like Dixmoor, a small suburban community in the south side, where the median household income for the year is about \$13,000. Dixmoor clearly has some other problems going on too. They pay \$12.50 per 1,000 gallons of water, which is what a family of four would consume in about three days. In Lake Forest, where Michael Jordan used to live, the median household income is closer to \$80,000 and they pay \$5 per 1,000 gallons.

Senator Inhofe. Mr. Ellis, I would ask that you try to wrap up.

Mr. Ellis. Absolutely.

There are these disparities occurring here. A lot of it is the size and scale of these water utilities. As we think about new funding, the funding is great but getting to the structural issues of encouraging through different ways these utilities to start to consider consolidation, to start to consider area so we can get to some bigger economies of scale and to think differently about how the money goes out so we are not just putting it into the ground and fixing some pipes in a handful of communities but are solving some of these underlying, fundamental issues.

I am happy to talk more about it in the question and answer section.

Thank you.

[The prepared statement of Mr. Ellis follows:]

Senator Inhofe. Thank you, Mr. Ellis.

We will now begin five minute rounds of questioning starting with Senator Duckworth.

Senator Duckworth. Thank you, Senator Inhofe.

Mr. Ellis, I will give you a little bit more time to speak but I just want to say that we have indeed come a long way. I served on the House Oversight Committee during the Flint water crisis. There, the issue was that they switched the water source to using the Flint River where the water was of a different composition.

I remember the first time I took a Chicago architectural book tour. It is a wonderful tour. If you are ever in Chicago, take it. It is run by the Architectural Society and it goes on the Chicago River.

They very proudly said to me on that boat tour about 25 years ago, we are really proud. This river used to be labeled toxic; we are just polluted now. That is the source of water for many communities. That was an improvement and I thought oh, my goodness.

Mr. Ellis, many of us would agree that when addressing infrastructure needs, we must do our best to tackle our most pressing challenges full steam ahead. There is also something to be said about low hanging fruit.

To me, compounding an inventory of SRF best practices and

establishing meaningful asset management policies and fiscal sustainability plans are common sense approaches to improving the critical relationship between taxpayers and State decision-makers in making the case for infrastructure investments.

Heart working families in Illinois want to know that before a single dollar of their money is spent, everything is being done to maximum the effectiveness of those dollars. I just want to follow up on what you just talked about. What else can we do to improve the relationship between decision-makers and taxpayers as related to funding opportunities?

Mr. Ellis. Increasing awareness through all communication channels about the tools that are out there. With all of these municipals we have, I know one mayor in a suburban area who actually has a water infrastructure background. A lot of folks who come to our office are running at the municipal level and do not have a background in these sorts of things and need to learn on the job, which is a tough way to do it if you have a massive water infrastructure system. Increasing awareness of the tools that are out there and how they can be used is step one.

One of the other issues is this is not water infrastructure until we get to a crisis like we see in Flint. It is not something a whole lot of the average citizens pay a lot of attention to. If they see rate increases being proposed, if they see it, maybe then they pay attention.

While we have environmental commissions at the local level and things like that, you do not have too many public works commissions of citizens participating in some of the decision-making. That seems like a best practice that also could be encouraged through the SRF just so people are paying more attention to it.

The other I think is starting to find ways to decouple local political decisions from rate setting and somehow make it more comfortable for people to adjust water rates on a more frequent basis so they can keep up with infrastructure backloads so you are not getting a 30 or 40 percent rate increase every ten years but see more modest increases or, in some cases, decreases on a more regular basis so it is not so inflammatory when this big rate deal happens.

It might improve trust. It might improve the ability to get things done. A lot of it is just communication because frankly, this is not an issue that we talk about very much.

Senator Duckworth. Given that, touching on what you just said about many municipal leaders, especially mayors, coming in without this water background, many small communities in Illinois and elsewhere may not have that capacity, expertise or resources to deal with the technical challenges and financing challenges associated with reliably providing good, clean drinking water and water services.

What suggestions do you have to address the resource issue whether it is technical expertise or even just resources to try to apply for an SRF?

Mr. Ellis. Within the SRF program, there is something called set aside programs that each State is allowed to use that can take some of the capitalization money that goes in every year and use it for different kinds of grants. Some States use those to fund grants specifically for looking at things like consolidation. Some use them for sort of technical assistance and staff building at the local level. The States are using these setasides in very different ways.

The reality is in one State, there might be a program to encourage consolidation and in another there might not be. It might be time to start getting greater consistency across the SRF programs.

The point I was trying to make about starting to consider consolidation and lumping some of these utilities together so that they can do things on a larger economy of scale, afford larger infrastructure projects and maybe get better bond ratings, finding ways to incentivize people to just think differently about the governing structure, the water utility, would be very helpful. That is not necessarily a rural or urban thing. That could apply throughout the spectrum.

Senator Duckworth. Thank you.

Mr. Kricun, I just have ten seconds. Do you want to add anything to that from your experience, especially with SRF?

Mr. Kricun. Yes. One thing I would say is a peer-to-peer initiative is really important. There are clean water utilities that have experience and are willing to share it with other utilities. Lining up utilities willing to share the information with utilities that need resources and information would really be important.

EPA and NACWA are working on a peer-to-peer program to try to connect people with resources with those that need it. I think that would be of great help, to see that advanced.

Senator Inhofe. Thank you very much, Senator Duckworth.

Let me ask you a question. You seemed to spend a lot of time talking about the SRF program, Mr. Ellis.

What do you think we could do from here that could change this program to make it work more efficiently. You both agreed there are some obstacles out there. Maybe we can overcome those. Do you have any thoughts about that?

Mr. Ellis. One of the big differences between States, Andy actually mentioned it, I think, is some States have decoupled management of the SRF program from whoever their State regulatory agency is. The loan program is managed by someone more like a finance authority, someone who is in the business of issuing loans and is able to operate faster, further or

whatever. Each State has a different one.

Some States still have the SRF program in their equivalent of the EPA. In my estimation, that can slow things down. Having professional financial management staff working on these loan programs and probably other loan programs not related to water infrastructure is one of the things that can speed up things.

Again, establishing some best practices and encouraging States to look at transitioning the program over to being what it should be, which is a loan program first and foremost, would be one of the ways you could start to encourage some greater speed and get these loan programs to function more like going to the bank to get a loan for a project at your house.

Faster review times and faster times to get the money out the door would be huge for some of these communities because if you are applying for a loan and have to retain engineering consultants or whatever, the costs build up and you are paying for someone to wait while the other folks review application times.

Again, the best practices are known in State revolving loan funds. Maryland has a couple, South Dakota has a couple and Texas has a couple. We have not yet put it together into a perfect package where everyone is more or less doing things recognized as best practices.

Senator Inhofe. You know, the different States are represented here. My State of Oklahoma is not unlike Mr. Frazee and the State of Arkansas. Way back when I was in the State legislature, before most of you were born, at that time the big problem was transferring water from one part of the State to the other part of the State. The eastern part of the State has plenty of water; the western part of the State has no water.

I have lived with this problem for a long time because my wife and I have been married 57 years. Her father was chairman of the Water Resources Board. We have addressed these problems for a long period of time.

Mr. Frazee, I was fascinated and I am very familiar with your area. Of course I am in eastern Oklahoma, pretty close to your home area. I was fascinated by the fact that you took the time to go out and locate people and help them because you needed help at one time. You were fortunate in having Senator Boozman come and be of assistance to you.

Do you want to give us any live examples of what you have been able to do, just one man out helping other neighbors resolve these problems?

Mr. Frazee. Anytime I see somebody hauling water, I take my time to stop, talk to them and explain my story, give them some insight to what they need to do, how they need to speak with Senator Boozman and get the word out.

I think pushing the saving act forward and getting the financing to get people help is important.

Senator Inhofe. I am familiar with Rogers. Rogers is a major city.

Mr. Frazee. I know.

Senator Inhofe. It does not take more than five minutes outside of Rogers to be in some pretty remote areas. Those are the people who have problems. I was shocked to find out that you did not have a water system when you are within how many miles of Rogers?

Mr. Frazee. We are probably five minutes from downtown Rogers. It is ridiculous that I drive past the water treatment plant every day going into town to go to work, to shop or whatever. On the sign where they treat the water, they are shipping it to Washington County which is the county south of us that has no impact on our little community there.

Senator Inhofe. Yet, you live in a part of the State of Arkansas that has an abundance of water.

Mr. Frazee. I live right by Beaver Lake. It has over 1,200 miles of shore front.

Senator Inhofe. I am very familiar with that.

Senator Booker.

Senator Booker. Thank you very much, Mr. Chairman.

Mr. Frazee, I want to thank you. Really, your story is

heroic and you are frankly showing what it means to be an American, what it means for citizens to be there for each other. I am really moved by that.

Folks are not just in communities in Arkansas, but in many parts of this Country, including my State of New Jersey, but I know we are all in this fight together. As much as I make jokes about being a Jerseyan, this is the United States of America.

I recently decided to go outside of our State to try to draw attention to some of these urgent crises because according to the Census, we have half a million homes around this Country that lack access to hot and cold running water. Most people do not even realize that. They do not have water running to a bathtub or a shower or a working flushing toilet. This includes 11,000 homes in New Jersey, but again, this is a national problem we are all in together.

We formed the Federal Government for the common defense and for the common security. For us to be a developing Nation and not have this is astonishing to me.

A few weekends ago, I went to rural Alabama to visit low income African American communities. I found that less than half the population is connected to a municipal water system. In famous counties like Lowndes County, where marchers marched across Edmund Pettus Bridge, it was stunning to me that many of the families there had no septic systems, no sewage systems and

had septic systems that failed because of the type of soil they had, so they just had raw sewage. I was stunned to see just raw sewage running behind peoples' homes.

I am the Ranking Member on the Subcommittee on Africa. I discovered this when I sat down with folks to talk about neglected tropical diseases. The scientists told me did you know that we still have these diseases in the United States of America? I said, no, that cannot be.

You see parasites that we think of in developing nations such as hookworm in the United States in poor communities. It is stunning to me because of our lack of water infrastructure. This is an outrageous environmental injustice that no child should be growing up in this situation.

It is disproportionately affecting poor communities. I saw it in Alabama so many historically African American communities.

Mike, your advocacy is profoundly important and I just want to thank you. It is important to your community but really what you are doing is bringing light to a problem of critical importance to our Nation as a whole.

Mr. Kricun, Andy, you are a friend. I want your comment on something we almost got to the finish line. I am sorry Chairman Inhofe left because I was going to heap praise upon him for being such a good partner of mine on so many issues. Many people confuse us because we look so much alike in the Senate

because I am the Robin to his Batman.

Last year, I was able to get the Water Infrastructure Investment Trust Fund bill and the Water Utility Workforce Development Program into the Senate-passed WRDA bill, something I was very proud of. It was done thanks to the leadership of Senator Inhofe and some of my Republican partners. There was strong bipartisan support. Unfortunately, those provisions were stripped out of the final bill by House Republicans.

As I continue to work with my colleagues to continue to move these important programs across the finish line, I was wondering if you could describe very briefly how the trust fund initiative and the workforce development programs could have helped Camden County and frankly, could have helped our Country?

Mr. Kricun. Thank you, Senator.

First of all, in our industry there is a thing called a Silver Tsunami. People are ready to retire and leave the industry. In our utility, for example, 50 to 60 percent are eligible for retirement in two to three years. We need to look for replacements. That is the case all across the Country with utilities as baby boomers retire.

Most of our wastewater treatment plants are in economically distressed communities. That is why the treatment plant was put there or the plant was put there and it became that way. No one wants to live next to the wastewater treatment plant.

We often have to look beyond our communities, our neighboring communities to find replacement workers because they do not have the skills or the training.

If we could develop the workforce training program, that would be a tremendous opportunity to actually have people who live in our neighborhoods work at our water treatment plants, be the replacement workers and also bring up their neighborhoods and communities.

I think it is a tremendous opportunity, urban or rural. I think it is a tremendous opportunity because water treatment jobs, wastewater and water treatment are good, solid jobs. There is a real scarcity of replacement workers. Yet, we are often in communities where people need jobs the most.

The Infrastructure Trust Program is absolutely necessary as well. Our D+ grade is unacceptable. It is only going to get worse with time. I strongly support your efforts and the bipartisan efforts. I hope you are successful this time, Senator.

Senator Booker. Thank you.

Mr. Kricun. Lastly, I wanted to say with regard to the poor communities across the Country, rural and urban, you are absolutely right. That is why the peer-to-peer effort is really important. There are utilities willing to share their knowledge and resources.

The help we need is to identify the small towns or cities that lack capacity so that we can be matched with them and assist them. That is help we could really use from the Federal Government.

Senator Booker. I appreciate that.

Mr. Chairman, this is one of those perfect examples where we in the United States, whether you live in a rural community or urban community, we have a common pain and we must join in a common purpose. This is the United States of America. This is a shame on our Nation that we have children growing up in these rural and urban poor communities with such unconscionable realities.

I am thankful again for the bipartisan work on rectifying this. Thank you.

Senator Rounds. [Presiding]. Thank you, Senator Booker.

As you notice, the Chair has moved again. Senator Inhofe has had to leave to go to another committee. Senator Boozman should be back shortly.

I have to agree that Senator Booker is correct. He and Senator Inhofe look an awful lot alike with the exception that Senator Inhofe's age shows a little bit more occasionally but we notice the likeness there.

I am from South Dakota. We have the same challenges everyone else does when it comes to water and water systems. We

have nine separate Native American tribes on reservations there. Water quality is critical there. Yet, they are in rural areas. We still struggle to provide high quality water there.

We have a couple of projects we call rural water systems. It sounds a lot like what you have been looking at in Arkansas in terms of well water and so forth. In our particular case, we have the Missouri River which runs down through the center of the State with great, high quality water and we have a very efficient way of being able to deliver quality water if we can get it to locations.

I agree it is very, very important. We have seen the ability of States when they have the resources to coordinate with rural water systems and provide individuals and local areas who really want to improve the quality of life, the opportunity to do so.

Right now we are at time where we have very low interest rates, long-term low interest rates. It is probably a real opportunity to look at the ability to bring assets together and extend, in a long-term payback period, the opportunity to invest in infrastructure. I most certainly agree that with rural water systems and the rehabilitation of existing municipal water systems, this is a real opportunity to look at it.

Mr. Frazee, thinking in terms of the story you told, I am just going to begin this by saying when I first met my wife,

Jean, she lived in a rural area near Lake Preston, South Dakota. They hauled water at that time. They hauled it in once a week into a cistern and back out again.

That also meant the quality of the water was not the best. It meant that everything was stained. The pipes would fill up and get clogged and everything else. I remember her dad, now in his early 90s, was the first president of a rural water system there. They coordinated in that group to put together over a period of years a rural water system called Kingbrook, which is still in existence today and rapidly growing.

They could not have done it if there was not an organization of local people willing to put in some money and revenue and lay out the plans, but then also to go to local lenders to borrow some money and then go back in through federal and State resources in order to borrow long-term to improve the quality of life.

It meant you could actually have pipes that worked, you had high quality drinking water, you had livestock that had high quality water, and also you could have a thing like a dishwasher in your house besides the husband after dinner. It meant dishwashers would actually work with the quality of the water.

I think it is real important that we talk about the need for this type of infrastructure on the top. It is right along with highways, roads and bridges.

I am just curious. I would really like to know, Mr. Frazee, in terms of how they helped to finance your part of Arkansas, was it the case where they were able to come in and help with assistance? Did the recipients of the water systems you had have a monthly water bill they would pay as well at that stage of the game? Was that the way it worked?

Mr. Frazee. Yes, Senator Rounds. They funded all the projects. You have to pay back. Veterans were discounted. I just have a payment like everybody else, very minimal, no interest. It is great.

Senator Rounds. Was it organized through the State or a local district, do you know?

Mr. Frazee. I want to say it was organized through the Water Well Trust. They found all the lending or supported all the lending.

Senator Rounds. Thank you.

Mr. Kricun, I am just curious. With regard to the financing and so forth you have used in the past, can you share a bit about this particular case? I like the idea of the States really being in charge of the operations and if we need the financial backing and so forth, we look at the federal level. I like the idea of block grants and I like the idea of having access to guaranteed loans, revenue bonds, and so forth.

Can you talk a bit about the kind of financing you guys

have seen, the success you have had and what the challenges were?

Mr. Kricun. Yes, thank you, Senator Rounds.

We basically were able to optimize our entire waste water treatment plant and install new equipment expressly through the State Revolving Fund in New Jersey, the New Jersey Environment Infrastructure Trust.

Because the operation and maintenance costs of the new equipment were lower than the old equipment because of less maintenance, because it is newer and lower electricity costs because it is more innovative, a newer generation.

Our operation and maintenance cost savings were greater than the annual debt service cost. The Infrastructure Trust, the SRF, was the difference between a go and a no go. Instead of interest rates at 5 or 6 percent, we were less than 1 percent, so our annual debt service costs were lower than the O&M savings.

As a result, we built our entire waste water treatment plant plus also helped the City of Camden's combined sewer system, Camden is one of the poorest cities in the Nation, while holding our rate. Our rate was \$337 in 1996. It is \$352 today in 2017. It was through some internal efficiency but mainly through the SRF.

The grants were great, but the State Revolving Fund Program

really is a very successful and helpful way to help us with our mission.

Senator Rounds. I could not agree more. I think it is a very important tool for us to make sure it is maintained into the future. Thank you.

Mr. Kricun. Thank you, Senator.

Senator Rounds. My time has expired.

Senator Whitehouse.

Senator Whitehouse. Thank you, Chairman. Thank you to all the witnesses for being here.

I was struck by Mr. Ellis' comment that he can remember wooden piping coming out of the ground. I represent Rhode Island and I have the same memories from my days doing water utility rate cases.

It is still not so great. Here is a piece of pipe that came out of the Kingston Water District. The manager, Henry Meyer, sent me that to remind me of what was going on. That site goes back to about the 1920s. As you can see, it is filled in pretty good. This is from old Kingston Village.

This piece of pipe comes from the Kingstown Road. As you can see from the side, this is plastic piping. This is much more recent. Check it out end on, look at the size of the remaining aperture in that pipe.

These pieces of pipe are kind of touchable evidence of the

problems we have and the scope of the possible infrastructure solution that we could have. I wanted to flag that particular situation.

I also wanted to flag another situation that is more a problem in our coastal States than in other States. Let me show you a map of Rhode Island. This is the northern part of Rhode Island and upper Narragansett Bay. Our capital city, Providence, is right here. This is Warwick Neck, this is Bristol and Warren.

What we have here is the latest information from our Coastal Resources Management Council about sea level rise happening along our coasts. Here is the existing bay. Light blue is actually land now. Right now that is land.

What we are looking at in the light blue is all these areas are expected to be flooded and under water by 2100 if we do not get ahead of what is happening with sea level rise. The State of Rhode Island turns into a Rhode Island archipelago. Warwick Neck becomes Warwick Neck Island. Warren and Bristol become Warren and Bristol Island and on and on you go.

Behind all of this blue of flooded land there will be a zone of potential storm flood zones and velocity zones that interfere with property ownership there as well. We are looking at a potential economic catastrophe if we do not get ahead of this.

For the purpose of this hearing, the point is right about here, the Town of Warren has its sewage treatment facility. If you live near the coast, if you are building sewage treatment facilities, you are building them right along the coastline because you want that gravity assist bringing the water and sewage down to the treatment plant.

When you start to look at flooding exposure like this, you are starting to look at significant replacement requirements or hardening and protection requirements for our infrastructure.

We are not really even talking about that. I know we are not even talking about that because sea level rise is driven by climate change and we are not allowed to talk about climate change here in the Congress in any effective or meaningful way but this is coming. The infrastructure along these coastal areas needs to be part of our conversation.

If Mr. Kricun or Mr. Ellis would like to comment, we have about a minute of time for you to respond either to my good old, nearly filled in pipes or to the coastal predicament for water infrastructure.

Mr. Kricun. Thank you very much, Senator. I will try to reply to both.

With regard to the infrastructure issue, as you know the ASC has a D+ grade for waste water and a D grade for water infrastructure. An emergency repair after a failure costs five

to seven times more than a planned replacement. It is not as though you can make the pipe last longer. Once it fails, it will fail but it will be much more costly not to mention the damage and the risk to people if it happens in an emergency.

Senator Whitehouse. If you had a responsible program, you would get five times as much done rather than waiting around for it to fail.

Mr. Kricun. Thank you, Senator. That is exactly right.

With regard to the coastal issue, in New Jersey we speak of climate history. In 2012, our treatment plants on the coast were already inundated, billions of raw sewage into the river, the Atlantic Ocean and the Passaic River. That is how the climate was five years ago.

Even if it does not work, Senator, there is a big infrastructure gap right now that we have to meet. We are trying to use green infrastructure to capture storm water, green energy to improve our resiliency against power outages and also hardening of our plant itself to make us less vulnerable to the climate as it is.

I know climate change is controversial. I do believe the climate will worsen.

Senator Whitehouse. It is not really controversial. It is just politically controversial.

Mr. Kricun. Even if it does not work Senator, we have a

gap right now that we should be working to correct. If we are correcting that now, then we can also look at projections like our Delaware River is supposed by 18 inches in the next 30 years. We should be looking to catch up the gap right now but also looking for projections ahead to be safe and protect us for the future.

Senator Whitehouse. Thank you.

My time has expired, so I suppose I should leave it there.

Senator Rounds. Thank you, Senator Whitehouse.

I will turn this back over to Senator Boozman but I would ask for one moment of privilege. That is with Senator Whitehouse. He has been a champion for the issues surrounding the changes occurring in Rhode Island and around Rhode Island.

I would suggest if there is one area of agreement among everyone, whether or not we think the current plans for how we slow down changes in the climate are right, the one thing we recognize is these changes are occurring.

I think that brings about a very important discussion point which is how do we go about addressing the needs which he has continuously and eloquently spoken to in terms of what it does to his State, in particular, along with a lot of other places along the coast. I think that is an area of agreement that we will find among all of us.

Senator Whitehouse. Thank you, sir. I look forward to

exploring that.

Senator Rounds. Absolutely. Thank you.

Senator Boozman, you are up and chairing.

Senator Boozman. [Presiding]. Thank you and thank you for sitting in. I apologize. I am in a situation where we desperately wanted to get this hearing done and we had to reschedule. Then all of a sudden they decided to have a vote on the Appropriations Committee. I have been having the vote on agriculture, energy and water.

There are not very many things I have to do but those are things you simply have to do. In fact, the reason we have had mixed attendance on both sides is there is a Commerce hearing going on as we speak. Also a number of people on this committee are also on the Appropriations Committee.

It is what it is but we do appreciate you being here.

I have a couple questions of you, Mike. In your testimony, you discussed the hardships of having to haul water and check water quality every day. I think the film was excellent. It really summed it up. Tell us a little bit about how that has made your life a little easier on a day-to-day basis?

Mr. Frazee. It gives me a lot of time to spend with my family, free time to do other things than having to worry about hauling water. It has freed up a bunch of time. I cannot thank you enough or the Water Well Trust for helping out my area.

Senator Boozman. Just a final follow up to that, you were able to get help in the sense of finding out who to contact. How do we do a better job and what would you suggest as far as outreach for other people in your situation and making it easier for them to know there is help available?

Mr. Frazee. I think the Savings Act needs to be pushed by the USDA and the EPA. Word needs to be out and we need to get the financing to help out areas like the area I live in. There is no funding there and we are kind of looked past.

Senator Boozman. Very good.

I will now turn to Senator Cardin who has been a great champion on the water issues. I was his Ranking Member a couple Congresses ago. He has done a tremendous job in this area.

Senator Cardin. Mr. Chairman, I wanted to come by and compliment your leadership and chairmanship of this subcommittee. One of the most productive sessions in Congress is when the two of us on this subcommittee work together. I really do appreciate your commitment to water infrastructure.

My staff has told me that most of the points I wanted responses from witnesses on have already been made. Thank you. Our Chairman has taken the leadership on additional tools to modernize our water infrastructure.

In Maryland, I can tell you about major water main breaks every day. I could tell you about one on River Road in

Montgomery County which was a river and people had to be rescued by helicopters. I can tell you about the Washington Beltway being closed as a result of water main breaks. I can talk to you about Dundalk, Maryland having to be evacuated because of a water main break. Downtown Baltimore had detours because of water main breaks.

That is all since I have been in the Senate. We have major, major problems. I can also tell you about one day finding out from public works in Baltimore they discovered a pipe still being used made out of wood. We have some really old systems in Maryland that need tremendous attention.

One of the great challenges with water infrastructure is that it is hidden until there is a break. We are wasting so much water every day and so much energy every day. There are public health risks, no question, about safe drinking water and the manner in which we deal with this.

Yes, we have existing tools, we have municipal financing, we have tax exempt bonds, we have revolving funds, and we have the initiative the Chairman has taken the leadership on for additional ways we can deal with the planning. All these are important programs.

We have also joined together as the sense of Congress to try to increase the amount of monies made available under these tools. We recognize the budgets are tough but we also recognize

there is a bipartisan desire to increase the amount of money we put into infrastructure in this Country, including water infrastructure. All those are extremely positive signs. I just wanted to come by to tell you we are going to look for every creative way we can to give you additional opportunities and tools in order to deal with it.

The last point I would make is this also involves another one of my passions which is the Chesapeake Bay and our environment because as we deal with water infrastructure, how we deal with a lot of the issues also involves the environment.

There are many, many reasons why we need to look for creative ways. There are several initiatives, none of which are partisan, and we really need to continue to make that progress. The Water Resources Development Act of last year made significant progress in that regard. A lot of the bills that members of this committee worked on were incorporated in the final WRDA bill.

Some were pulled out in the House. I thank our Chairman because we are working together to try to get those provisions that deal with water infrastructure moving now in this Congress that we were not able to get done in the last Congress.

I thank the witnesses. I would let you know this is an extremely high priority for all of us on this committee. It is great to be on this committee for many reasons. One of the

principal reasons is that we have some incredible members I work with, including the Chairman and the Ranking Member of this subcommittee.

I thank them both for their leadership on this issue.

Senator Boozman. Thank you so much. We do appreciate your leadership.

As you pointed out, we really do have a good committee that works in a very bipartisan way to sort out these things. The road that Mike lives on, that area, it is Republicans and Democrats and who cares. It is just the idea of providing the service people desperately need.

Senator Cardin. Mr. Chairman, I just want to point out my reason for popping in and out is that the Senate Foreign Relations Committee, where I am Ranking, is holding hearings on important nominations. I apologize for not being here for the testimony.

Senator Boozman. I appreciate your pointing that out. I have not been here most of the time either because of Appropriations. I am told that Senator Gillibrand is on the way so we will wait just a few minutes for her.

Do you all have any comments?

Mr. Ellis. I would like to actually respond to one of the questions Senator Whitehouse mentioned when he held up his prop of the full pipe.

One thing to note is that when those pipes fill with sediment or whatever, you lose the original design capacity of that pipe. As we think about infrastructure, we are often talking about building new things but just the basic maintenance of going in and cleaning out the pipes is also something a lot of communities cannot afford or are not doing, so they are losing design capacity. The solution is actually just to repair the existing system.

That same phenomenon is also occurring on private property. A lot of what we have talked about today is public infrastructure, with the exception of Mike's situation and needing to build wells for private homes.

In an urban environment, the biggest issue on private property is the lateral lines that connect your home to the municipal pipeline. It is actually in those lines where we have lots and lots of older pipes either full like that or pipes with lead in them from bygone days when we used to do that.

You have about 30 feet for every private property out there and who knows what is going on in some of these homes, whether that pipe is cracked or whether lead is leaching out of that private pipe.

There have been a couple communities, I can think of Madison, Wisconsin and Galesburg, Illinois that have used the SRF Program to put money into the hands of private property

owners to take out those pipes. That project of tearing up your lawn, taking out that old pipe, putting in a new pipe, can be \$20,000 to \$30,000 per home. In a low income community, you cannot really ask a homeowner to do that. They probably do not have the money and if they do, they are saving it for something else.

Finding a way to use the SRF to tackle projects on private property is something we are only starting to grapple with, whether that is well installation or fixing these lateral line issues going into the house, and then issues coming back out of cracks in the sewage and storm water pipe where you have stuff leaching out into lawns and things like that.

Figuring out how to use these public resources or public-private partnerships to work on private properties is, I think, one of our next big challenges because a lot of the infrastructure out there is not publicly-owned.

Senator Boozman. Thank you very much.

Mr. Kricun.

Mr. Kricun. As you discussed, infrastructure needs to be improved in order to protect the public health and the environment for safe drinking water and to protect against combined sewage overflows and flooding.

Doing so will not only be necessary to protect the public health and the environment, but also result in job creation, not

only for the construction but also for the maintenance of the new system. It is definitely a win-win.

I also agree with what Josh said about the efficacy of the maintenance of the existing collection systems. We did a study where by cleaning the pipes on a regular basis, we improved their collection capacity by 30 to 35 percent. That is a huge win.

The problem is the economics of such communities, whether urban or rural, sometimes lack the capacity. That is why I think in addition to public-private partnerships, public-public partnerships where utilities assist each other with resources would really be helpful in getting the most from our industry and infrastructure.

Thank you.

Senator Boozman. Very good.

Senator Gillibrand, thank you so much on this very, very busy day. I have had to miss a good part of the hearing because of other committee duties. I know you are in the same situation. Thank you for coming by.

Senator Gillibrand. Thank you so much, Mr. Chairman and Madam Ranking Member.

Mr. Kricun, in your testimony, you talk about how after Super Storm Sandy, over 10 billion gallons of raw and partially treated sewage flooded streets and ruined homes. This raises an

important point about the need to think about resilience to the impacts of climate change and extreme weather when making investments to repair or replace aging water pipes.

We need to be thinking ahead. For example, we have water pipes in New York that are over 100 years old. Nearly half of New York City's water pipes were built before World War II. We should be thinking about the next 50 to 100 years from now when we design projects today.

What should we be doing to improve how we make decisions about water infrastructure investments to take into account extreme weather, sea level rise and other climate-related impacts?

Mr. Kricun. One thing we need to do is make sure we are more resilient and less vulnerable to severe events. Hurricane Sandy occurred five years ago, so that is already climate history. Our infrastructure was already proven to be inadequate for how the climate was and how it is now. If the climate does worsen, that gap will only widen.

One of the things we are doing is trying to implement green energy programs so that we are 100 percent off the grid. We are installing solar panels, installing a combined heat and power system to capture gas and turn it into electricity. Our goal is to be off the grid by 2020. Reducing reliance on the electric grid would be very important.

Number two, green infrastructure in combined sewer communities is very important because you are sucking up the storm water and preventing it getting into the combined sewer.

In addition, as we discussed, the infrastructure is rated D+ so it needs to be replaced. When it is being replaced, it ought to be replaced with the notion of the possibility of climate worsen and therefore being sized appropriately to make sure that it is properly designed not only for today's conditions but the future.

Senator Gillibrand. Over the past several years, we have seen drinking water emergencies across the United States where many lives have been put at risk because of contamination from toxic chemicals.

The most visible of these was obviously in Flint, Michigan but closer to home for me were people of Hoosick Falls and upstate New York who have been experiencing nothing short of a tragedy because their drinking water has been tainted with the chemical PFOA. We have seen it across my State in places like Newburgh and on Long Island.

When we talk about water infrastructure, we need to also be talking about how we are going to keep our drinking water safe. This is a real challenge for small communities like Hoosick Falls that have limited resources.

This question is for the entire panel. How can we do a

better job of helping small communities test for and address contaminants like PFOA in their drinking water systems? Mr. Frazee.

Mr. Frazee. I think the USDA and EPA need to address those issues in small communities like where I am from and help from our Federal Government.

Senator Gillibrand. Thank you.

Mr. Kricun.

Mr. Kricun. For example, in the instance of lead, I think lead awareness is very important. We not only need to make sure we are treating water at the source, the drinking water treatment plants themselves, but making sure the conduits from the plant to the home and also the internal plumbing within the home are also subject to lead plumbing.

Most homes built prior to 1980 could have lead solder. Even if the water coming from the water treatment plant is safe, for children using the water, it may be contaminated with lead just by sitting overnight in lead plumbing. Lead awareness and making sure they are aware of filters or running the water 30 to 45 seconds to reduce the risk could mitigate a significant portion of that lead issue.

With regard to contaminants and chemicals, I agree with Mr. Frazee that it is important to have federal and State assistance and maybe even hub utilities nearby, if there is one larger

sitting nearby that might be able to lend resources to smaller communities and leverage that. I think we need to give small communities, be they urban or rural, as much assistance as possible.

Senator Gillibrand. Thank you.

Mr. Ellis.

Mr. Ellis. In terms of testing, the testing that needs to occur is both at source water, rives, ponds and streams, but also as it is coming out of the tap. It is such a distributed system and you need lots of people out doing it.

I think the issue of water testing, point-based testing, is a great opportunity for schools and citizen scientists. That could be through programs at NOAA or somewhere else to get resources to school programs or other organizations that can go out on a consistent basis with established protocols for testing, collect that data and send it in to the proper water management officials.

Referring to your previous question, one of the issues we have with planning infrastructure to be more resilient, this is not a coastal issue or an inland issue, is we have great divergence between States but also within States about the actual data they are using to project how much rainfall we might have or what climate conditions might be.

I know in Illinois, we have some communities using data

from the 1960s that was projecting out weather events. All of that was based on information they had collected before the 1960s. As precipitation patterns change, if you are using data from the 1960s, 1970s, 1980s, or 1990s, you are not able to size infrastructure appropriately for what we predict to be weather events. We are always looking backwards when we size the infrastructure because that is the precipitation that we are using.

Getting greater consistency to get everyone to update and use the latest data on precipitation projections, in particular, would be helpful and greater consistency across communities so we can get better best practices out there on how we size and build this infrastructure across States. We cannot be building stuff for 2060 using data from 1960, but we are.

Senator Gillibrand. Thank you, Mr. Chairman.

Senator Boozman. Thanks so much.

Senator Duckworth.

Senator Duckworth. I just want to thank the Chairman for having this hearing. This is incredibly useful and I think eye opening for many people.

One of the things we have not touched on and bears further looking into is the public infrastructure system, especially when it comes to public schools. There are many, many public schools in this Country that were built well before the 1980s.

As you talk about the water that sits in the schools overnight, you can actually go into a school and test the water. This happened in Chicago, where you have one drinking fountain that fails the lead test and one that passes. Until you replace the entire piping system within the school itself, you are never going to resolve the problem.

This is going to be a problem for rural communities and communities that do not have the resources and the high tax base. It just reinforces the need for real infrastructure investment.

I really want to thank the Chairman for bringing this to everyone's attention.

Thank you.

Senator Boozman. Thank you. Thank you for pointing this out as witnesses have, even the witnesses here, that you have an urban area or very rural area essentially with the same problems.

We appreciate you very much, Senator Duckworth and your staff for the job they have done in helping us get ready for this. I appreciate my staff.

Thank you all for coming and testifying. This has been a very helpful hearing as we go forward.

With that, the record will be open for two weeks for any additions. The meeting is adjourned.

[Whereupon, at 11:34 a.m., the subcommittee was adjourned.]