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

HEARING

BEFORE THE

SUBCOMMITTEE ON FISHERIES,
WATER, AND WILDLIFE

OF THE

COMMITTEE ON
ENVIRONMENT AND PUBLIC WORKS
UNITED STATES SENATE

ONE HUNDRED FIFTEENTH CONGRESS

FIRST SESSION

JULY 20, 2017

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C O N T E N T S

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, DC.

The Subcommittee met, pursuant to notice, at 10:02 a.m. in room 406, Dirksen Senate Building, Hon. John Boozman (Chairman of the Subcommittee) presiding.

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

OPENING STATEMENT OF HON. JOHN BOOZMAN, U.S. 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 toward 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 giving 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.

Last, 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 common sense solutions we can all agree upon.

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

OPENING STATEMENT OF HON. TAMMY DUCKWORTH, U.S. 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+ 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 6 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.

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 DC 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 DC 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 THE 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 express 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 godsend to rural communities like mine. We were never going 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. 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. [The video is available online at
https://www.youtube.com/watch?v=__GkV4kD7Zyc. The video also is available in the Committee files.]

[The prepared statement of Mr. Frazee follows:]

Mike Frazee
Recent Participant in Rural Drinking Water Assistance Program
Roger, AR

Mr. Frazee has lived in Rogers Arkansas since 1990. Since moving to Rogers to be closer to his family, he has not had running water.

In 2014, Mr. Frazee's mother contacted Sen. Boozman to tell him the problem the community was facing. Sen. Boozman put them in touch with the Water Systems Council, who were able to drill wells that brought fresh reliable drinking water directly to their home and their neighbors' homes.

Since then, Mr. Frazee has been getting the word out to everyone who is still hauling water in his community. Whenever he sees someone hauling water, he stops them and tells them about the options that are available for assistance.

Mr. Frazee currently resides in Rogers Arkansas with his wife Jenny. He has been running his own contractor business for a number of years.

Senate Committee on Environment and Public Works
Subcommittee on Fisheries, Water and Wildlife

Hearing
"Innovative Financing and Funding: Addressing America's Crumbling Water Infrastructure"

June 20, 2017

Testimony
By

Mike Frazee

Introduction

Good afternoon.

Chairman Boozman, Ranking Member Duckworth and Members of the Subcommittee, I would like to express my 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 a safe, reliable drinking water.

It is my hope that through telling the story of my family's struggle to secure safe, reliable, drinking water that Congress will put in place policies that will bring affordable drinking water to thousands of Arkansans and 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.

Setting the Stage

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, thousands of miles a year, to haul water from a coin operated water machine to their homes. And, if that water machine is broken or you have a snow or ice storm you might have to go several days without water.

Hauling water consumes many hours a week, puts tremendous wear and tear on your vehicle and has resulted in a number of deadly accidents. My dad who is a disable veteran spent much of his life hauling water to our home. My mother was constantly stressed about the water level in the tank outside our home.

Many people in our area (veterans, disabled, single parents) are down on their luck, just trying to do right and survive. These folks can't go to a bank and ask for loan to pay for a well. We don't have an 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 machine I used has sign that states – "we cannot insure the quality of the water." How awful is that?

Wells: A Drinking Water Supply that Works

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 facilitated discussions 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 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 mom, myself and families across Arkansas quality drinking water at a reasonable price, through wells.

And 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 set up Clearing Houses 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.

Conclusion

The "2011 EPA Needs Survey" estimated the shortfall in drinking water funding for small communities at $64.5 Billion Dollars. As we've seen in Arkansas 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 wells in these rural areas. I know firsthand 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 wells 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.

Senator BOOZMAN. Very good.
Mr. Kricun.

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

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 stops 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 result 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 wastewater 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 wastewater 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 timeframe 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 are 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:]

Andrew H. Kricun

Andy Kricun is the Executive Director and Chief Engineer of the Camden County (NJ) Municipal Utilities Authority, which operates an 80 million gallon per day wastewater treatment plant and a large regional sewer system that services over 500,000 customers in southern New Jersey.

Mr. Kricun graduated with honors from Princeton University with a Bachelor's Degree in Chemical Engineering. He has a Professional Engineer's license in Civil Engineering and over 30 years of experience in wastewater and biosolids management. He has also been selected as a Board Certified Environmental Engineer by the American Academy of Environmental Engineers.

Mr. Kricun serves on the board of the National Association of Clean Water Agencies (NACWA) and is the chair of its Clean Water Industry of the Future and its Environmental Justice and Community Service committees. He also serves on the New Jersey Environmental Justice Advisory Council.

Mr. Kricun recently received an *Environmental Quality Award* from the U.S. Environmental Protection Agency (EPA) and was also the 2012 recipient of the *Praxis Award for Professional Ethics*, and a 2015 recipient of the NACWA President's Award for service to the clean water industry.

NACWA
A Clear Commitment to America's Waters

Closing the Clean Water Infrastructure Funding Gap
June 20, 2017

ORAL TESTIMONY OF:

Andrew Kricun, P.E., BCEE
Executive Director/Chief Engineer of the
Camden County Municipal Utilities Authority
On behalf of the National Association of Clean Water Agencies

BEFORE THE:

Fisheries, Water, and Wildlife Subcommittee
Committee on Environment and Public Works
United States Senate

Sen. John Boozman, Chairman
Sen. Tammy Duckworth, Ranking Member

Chairman Boozman, Ranking Member Duckworth and members of the Subcommittee, thank you 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 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. At Camden County MUA we operate an 80 million gallon per day wastewater treatment plant and a large regional sewer system that serves over 500,000 customers 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. Like clean water agencies around the country, Camden County MUA has many competing pressures – including the need to reinvest in aging infrastructure, maintain and upgrade treatment processes, comply with Clean Water Act rules and regulations, make strategic long-term investments, and help support a high quality of life in our community which has significant affordability constraints. Underlying all these challenges is the ongoing obligation to optimize our infrastructure and our performance for the protection of the public health and the environment.

The need for greater investment in our nation's infrastructure, including water, is well known. Nationally, our nation's clean water infrastructure has received a D+ grade from the American Society of Civil Engineers' infrastructure report card, and the EPA calculates national investment needs just to fully comply with the Clean Water Act under current conditions at approximately $271 billion over the next 20 years.

In making operational and investment decisions we also need to account for changing conditions such as precipitation patterns that affect the volume and intensity of flows through our system, including extreme storms. As an example, during Hurricane Sandy and its aftermath, billions of gallons of untreated wastewater were discharged into our waterways; drinking water systems were overwhelmed as well.

CCMUA is working on wide-ranging efforts to address this infrastructure funding challenge at our local level. First and foremost, we are focused on improving our own internal efficiency, including optimized asset management, implementation of an environmental management system, and minimization of costly reactive and emergency maintenance. In these ways, clean water utilities can reduce operations, maintenance, and capital costs and thereby partially reduce the gap between their funds and their infrastructure requirements.

We similarly look to Congress and EPA to help ensure we can advance federal Clean Water Act goals as efficiently as possible. Compliance with the Act is a key driver of ratepayer costs, and so ensuring that dollars spent are being used to achieve the greatest possible return is key to addressing the infrastructure gap.

Along these lines, I applaud the Senate Environment and Public Works (EPW) Committee on passing S.692, which would codify the Integrated Planning approach to meeting Clean Water Act obligations. The advancement of Integrated Planning has been a key priority for NACWA, and we thank the Committee for its commitment to this important issue. NACWA also is very supportive of water quality partnerships between municipal wastewater entities and upstream landowners, and we thank the Subcommittee leadership for their interest in this issue. We believe these partnerships hold great potential to help reduce water infrastructure costs and improve water quality.

I also applaud Subcommittee leadership for introducing S.1137 which would reauthorize the Sewer Overflow Control Grant program. Funding for this program would help utilities across the country that are working hard to address sewer overflows – a leading cause of rate increases for many utilities.

While clean water utilities welcome grant funding opportunities, we most often now look to the federal government for *financing* tools, particularly the Clean Water State Revolving Fund. In Camden County, we used NJ's SRF, the New Jersey Environmental Infrastructure Financing Program, to rebuild and upgrade our entire wastewater treatment plant, significantly improving its water quality and odor control performance. We did so while holding user rates steady for 17 years, from 1996-2013. The operational efficiencies introduced through our environmental management system were a big part of this success.

However, this could never have been accomplished without judicious use of New Jersey's State Revolving Fund. The program offers loans that are, in sum, 75% interest free and spread out over 30 years. This results in very low annual debt service payments for new capital infrastructure. Since new equipment usually reduces maintenance and increases energy efficiency, the savings in operations and maintenance costs equaled or even exceeded our annual debt service payments. The importance of the SRF in accomplishing this cannot be underestimated.

Through my role in NACWA I know that we are not unique– the SRF is a fundamental tool for addressing the infrastructure funding gap around the country. The program has received strong support from Congress and as President-Elect, President Trump called for a tripling of the SRF. NACWA believes additional funding for the SRF is vital. As stated previously, the SRF enabled our agency to significantly upgrade our facilities without raising user rates.

Further, in the last Congress a Senate-passed provision would have established a Water Infrastructure Trust Fund to augment federal SRF funding through a voluntary label on certain consumer goods. This concept is strongly supported by the Water Infrastructure Network and NACWA welcomes this and other efforts to increase the funds available through the SRFs.

NACWA is also very supportive of other "tools in the toolbox" to facilitate investment in clean water. These include EPA's Water Infrastructure Finance and Innovation Act (WIFIA) Program, tax-exempt municipal bonds, leveraging private investment where appropriate through public-private partnerships, and even utilizing "public-public" partnerships where larger utilities can share resources and financing capabilities with smaller utilities. Tax incentives to bring innovative technologies and approaches into the water sector are also vital and can spur what we call the "Utility of the Future" initiative.

In short, any approach that helps "grow the pie" of available funding and financing options for water infrastructure is worthy of consideration. And we call for the federal government to put increased federal dollars on the table, along with state and local money, to help address our water infrastructure challenges.

Finally, I would like to briefly address what is at the heart of one of the most vexing challenges facing our sector and, I believe, a key cause of the growing infrastructure gap – affordability. Nationally, the cost of clean water services has increased faster than the rate of inflation for 15 consecutive years. For households with low or stagnant incomes, the amount they are spending on water often exceeds what EPA considers affordable.

Municipalities are facing enormous pressure to set rates based on the often-growing percentages of low-income households in their service area– even if it means deferring investments. A safety net for the lowest-income households would better position utilities to charge rates that fully reflect the true cost of service. NACWA is exploring the concept of a Water Ratepayer Assistance Program to both address low-income household affordability challenges while incentivizing utilities to move towards full-cost pricing. This is a concept we look forward to discussing with the Subcommittee and other Members of Congress in the near future.

In closing, I would like to thank the Subcommittee, Congress, and the Administration for their focus on infrastructure investment. I believe that investment in water is a non-partisan issue. Investment in water infrastructure creates jobs, ensures urban and rural development, and protects public health and the environment. As Congress develops its budget and considers infrastructure legislation, clean and safe water infrastructure investment needs to be a top investment priority. Only a long-term local/state/federal partnership can usher in the era of the Clean Water Utility of the Future.

I thank you for holding the important hearing and look forward to answering any questions.

NACWA
2016 COST OF CLEAN WATER INDEX

Average Charge for Wastewater Services Increases 2.6% in 2016

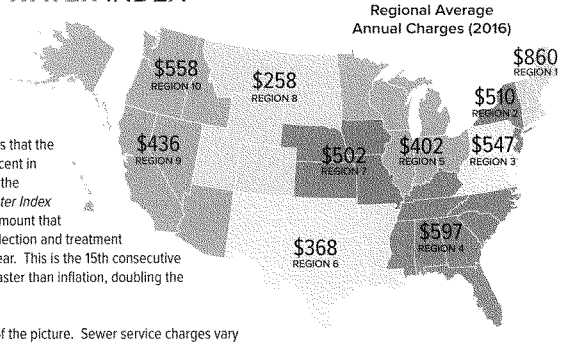
NACWA's 2016 *Cost of Clean Water Index* indicates that the average cost of wastewater services rose 2.6 percent in 2016, double the rate of inflation as measured by the Consumer Price Index (CPI) (see *Cost of Clean Water Index vs. Inflation* chart below). The national average amount that a single-family residence pays for wastewater collection and treatment (i.e., the sewer service charge) is now $479 per year. This is the 15th consecutive year that sewer service charges have increased faster than inflation, doubling the average sewer service charge since 2002.

The national average of $479 provides only part of the picture. Sewer service charges vary widely among EPA regions and states, and are affected by demographics, geography, aging infrastructure, local water quality issues (e.g., total maximum daily loads), wet weather infrastructure needs, and drought-related water conservation. As an example of these variations, the *Regional Average Annual Charge* map (above) shows a breakdown of average charges by EPA region. The average service charge by region varies from a low of $258 in EPA Region 8 to a high of $860 in EPA Region 1.

The *Cost of Clean Water Index vs. Inflation* chart (below) presents a national snapshot of the increase in service charges, as compared to inflation, since 2002. Table A-1 (see *Cost of Clean Water Data Annex*, page 3) provides a breakdown of NACWA *Index* values and service charges back to 1985, the base year for the *Index*. The values for 2016 are based on the responses from 167 NACWA members serving nearly 103 million people.

In 2016, a majority of clean water utilities implemented rate structures that resulted in increases in the average annual household service charge. However, in some communities (6% of respondents), volume-based rates increased, but average service charges dropped due to reductions in residential water use. Additional national and regional data are included in Tables A-1 and A-3 (see *Cost of Clean Water Data Annex*, pages 3-4).

Regional Average Annual Charges (2016)



2016 NACWA *Cost of Clean Water Index* Summary

103 MILLION Population Served

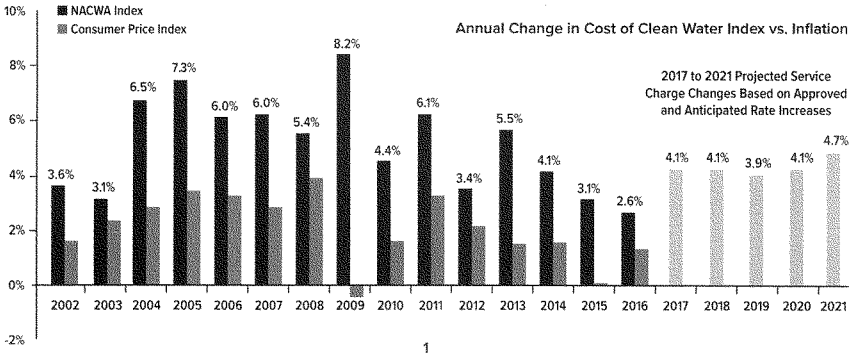
167 Utility Respondants

$479 Avg. National Annual Sewer Service Charge

2.6% Increase in Sewer Charges from 2015-2016

1.3% Increase in Consumer Price Index 2015-2016

Annual Change in Cost of Clean Water Index vs. Inflation



2017 to 2021 Projected Service Charge Changes Based on Approved and Anticipated Rate Increases

Projected Charges Expected to Increase 3.9 to 4.7% per Year

Customers pay for sewer services in a variety of ways. Charges may be based on property values, gallons of water used, on a flat rate, or include some combination of these values. Because of this variability, the NACWA *Index* uses what the average single-family residence pays annually because it is a more consistent measure to track the cost of service over time.

This year NACWA's *Index* indicates that clean water utilities are expecting average charges to continue to increase from 3.9 to 4.7% per year for the next five years. Consent decree requirements and associated new capital construction and debt service were the top reasons cited by respondents for projected rate increases greater than 25 percent (over 5 years). Other drivers for large rate increases include infrastructure rehabilitation and replacement, higher operation and maintenance costs, cominbed sewer overflow (CSO) long-term control plan compliance, and sewer system improvements to reduce sanitary sewer overflows (SSOs).

The *Projected Increases in Charges, 2017-2021* chart (right) shows the projected percentage increase in charges distributed among agency respondents. Of those utilities responding, nearly one-half of agencies project cumulative five-year rate increases above 25 percent

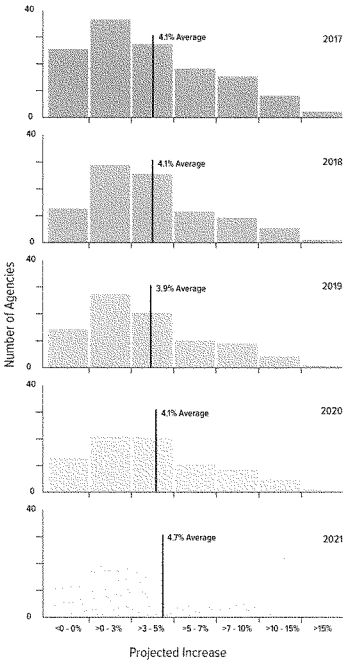
Average Annual Service Charge Has Doubled in Last 14 Years

The *Average Annual Service Charge* chart (below) presents a national snapshot of sewer service charges since 2000, and provides a projection of average charges through 2021. From 2002 to 2016, the average annual service charge has doubled from $239 to $479. Meanwhile, the Consumer Price Index (CPI) has increased only 33 percent in this same time period.

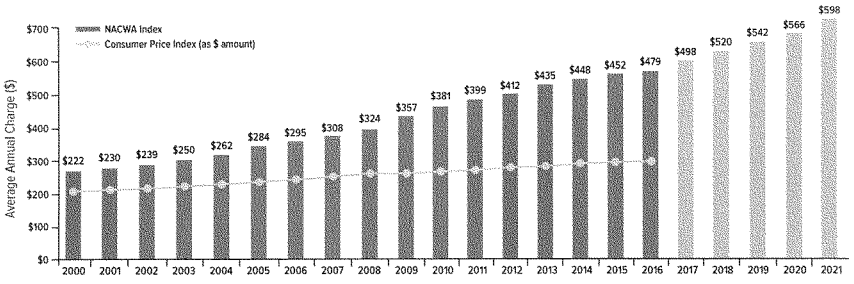
The average annual sewer charge of $479 represents 1.97 percent of the 2016 Federal poverty income threshold ($24,300) for a family of four. This proportion has risen from 1.3 percent in 2000. Projected increases in rates show the average charge reaching nearly $600 by 2021.

Disclaimer: The NACWA Index strives to use the best available data each year when determining current and historical household charges and trends. These data are intended for comparison purposes only, and are subject to change from one year to the next. While this document presents the most up-to-date data available, if better data become available in the future, the data presented here may be modified.

Projected Increases in Charges 2017-2021



Average Annual Service Charge, 2000-2016 & Projected



2016 NATIONAL DATA ANNEX

Table A-1: NACWA Cost of Clean Water Index, 1985 to 2016

Year	NACWA Index	Change from Previous Year	Average Service Charge ($)	Change from Previous Year ($)	Change to Consumer Price Index	Total Responses	Population represented (in millions)	Total Responses in Both Previous and Current Year
1985	100.0		$102.75			155	88.6	
1986	106.8	6.8%	$109.69	$6.95	1.9%	158	88.8	155
1987	112.4	5.3%	$115.51	$5.82	3.6%	157	88.8	157
1988	119.9	6.9%	$123.17	$7.99	4.1%	163	91.3	157
1989	130.1	8.4%	$133.65	$10.35	4.8%	166	92.0	163
1990	141.0	8.4%	$144.84	$11.25	5.4%	169	92.3	166
1991	153.7	8.9%	$157.88	$12.84	4.2%	171	92.5	169
1992	166.7	8.5%	$171.33	$13.84	3.0%	175	94.7	171
1993	183.1	8.3%	$188.12	$13.78	3.0%	184	100.5	170
1994	193.4	5.1%	$198.68	$10.32	2.6%	194	102.4	182
1995	197.8	2.2%	$203.22	$4.23	2.8%	199	99.6	189
1996	201.7	3.6%	$207.28	$6.44	3.0%	205	105.8	195
1997	203.9	1.3%	$209.49	$2.88	2.3%	208	107.9	202
1998	207.8	2.4%	$213.52	$4.89	1.6%	214	106.6	204
1999	209.8	0.7%	$215.61	$1.90	2.2%	224	109.4	210
2000	216.4	3.0%	$222.31	$6.41	3.4%	234	113.7	218
2001	223.5	2.2%	$229.63	$4.47	2.8%	238	113.5	227
2002	232.6	3.6%	$238.99	$8.45	1.6%	220	107.8	215
2003	243.0	3.1%	$249.71	$7.69	2.3%	232	108.4	198
2004	254.8	6.5%	$261.79	$16.10	2.7%	222	109.0	200
2005	276.3	7.3%	$283.91	$18.79	3.4%	213	108.7	188
2006	287.1	6.0%	$295.03	$17.23	3.2%	203	107.0	177
2007	299.4	6.0%	$307.60	$16.47	2.8%	196	104.6	173
2008	315.4	5.4%	$324.11	$18.00	3.8%	191	107.6	165
2009	347.3	8.2%	$356.90	$26.41	-0.4%	171	103.4	161
2010	371.2	4.4%	$381.45	$16.82	1.6%	181	100.7	143
2011	387.7	6.1%	$398.57	$23.78	3.2%	176	104.0	158
2012	401.6	3.4%	$412.17	$13.97	2.1%	179	108.1	148
2013	424.3	5.5%	$435.26	$22.53	1.5%	183	107.8	155
2014	436.4	4.1%	$448.40	$17.43	1.6%	183	112.4	164
2015	439.9	3.1%	$451.90	$13.54	0.1%	172	109.8	157
2016	466.1	2.6%	$478.87	$15.56	1.3%	167	102.8	150

Note 1: The value of the annual Service Charge Index is based on all responses received. The base year has been indexed to the value of 100.

Note 2: The annual percent change in the Index (national and regional) is based on the responses of those agencies that responded in both the previous year and the current year using the same calculation method.

2016 NATIONAL DATA ANNEX

Table A-2: Projected Annual Service Charge Increases, 2017-2021

	2017	2018	2019	2020	2021
Average Annual Increase (%)	4.1%	4.1%	3.9%	4.1%	4.7%
Average Service Charge (Projected $)	$498.24	$520.03	$541.69	$565.99	$598.36
Change from Previous Year ($)	$19.37	$21.79	$21.66	$24.30	$32.37
# of Total Responses	138	136	131	131	129
# of Responses with Numeric Estimates	131	91	85	75	70
Approved	46%	21%	12%	9%	7%
Planned	26%	41%	43%	44%	39%
No Change	18%	8%	8%	6%	5%
Uncertain	10%	29%	37%	41%	49%

Table A-3: Regional Annual Average Sewer Service Charges, 2016 Summary

	Region 1	Region 2	Region 3	Region 4	Region 5	Region 6	Region 7	Region 8	Region 9	Region 10	National
# of agencies	5	13	22	26	29	14	10	8	25	15	167
Population	2.8	15.0	12.3	10.2	15.8	12.3	4.6	2.7	21.5	5.0	102.8
2016 Charge											
Average	$860.09	$509.82	$547.29	$597.06	$401.59	$368.41	$501.97	$258.41	$435.60	$557.88	$478.87
Median	$473.68	$411.11	$446.56	$455.04	$424.44	$359.16	$420.79	$265.71	$445.00	$492.31	$435.60
Minimum	$330.00	$178.15	$234.96	$255.84	$167.76	$216.60	$247.01	$182.88	$221.09	$300.66	$167.76
Maximum	$967.25	$648.08	$706.68	$1,485.24	$812.45	$862.20	$702.44	$471.72	$1,270.80	$776.74	$1,485.24
% Change											
1-year (2015-16)	5.8%	1.1%	2.7%	3.0%	1.0%	1.8%	8.9%	3.1%	2.4%	4.2%	2.6%
3-year (2013-16)	14.0%	8.8%	9.7%	10.1%	16.5%	3.4%	25.0%	15.7%	5.7%	10.4%	9.8%
5-year (2011-16)	24.8%	17.8%	26.6%	10.6%	22.0%	17.3%	58.3%	18.3%	13.8%	21.8%	19.8%

2016 EPA REGIONAL DATA ANALYSIS

Table R-1: Service Charge Index By EPA Region (1985-2016)

Year	Region 1	Region 2	Region 3	Region 4	Region 5	Region 6	Region 7	Region 8	Region 9	Region 10	National
1985	69.8	85.4	121.1	139.0	137.5	106.0	63.4	101.8	63.1	115.4	100.0
1986	80.0	89.6	137.2	144.0	141.3	121.4	68.2	101.9	68.0	124.8	106.8
1987	98.0	100.3	139.1	152.7	136.5	142.4	70.7	102.1	73.4	129.4	112.4
1988	106.2	110.1	142.8	148.1	139.5	155.2	72.2	108.8	85.2	139.0	119.9
1989	143.0	127.2	151.5	155.6	140.3	163.6	74.2	105.6	100.4	150.5	130.1
1990	166.7	147.0	154.3	163.4	145.3	176.0	73.6	115.3	114.8	158.6	141.0
1991	194.4	166.8	185.5	171.1	149.9	168.7	82.3	120.4	131.8	173.7	153.7
1992	218.5	195.3	187.1	178.4	158.0	171.0	92.8	125.8	147.6	193.0	166.7
1993	304.2	196.7	208.7	189.6	166.6	187.4	132.1	137.9	162.4	200.7	183.1
1994	306.0	222.5	213.5	203.8	173.3	191.7	141.6	136.2	173.2	224.9	193.4
1995	303.3	215.2	213.3	215.5	178.9	206.9	142.3	145.9	175.9	245.6	197.8
1996	320.6	206.4	222.6	224.2	180.4	212.1	144.9	143.9	183.2	258.7	201.7
1997	310.2	208.1	222.9	235.3	176.8	211.0	153.5	143.6	187.2	265.2	203.9
1998	314.7	214.6	228.7	234.1	177.8	208.6	160.5	145.3	196.6	272.7	207.8
1999	316.1	222.4	230.1	241.1	182.9	207.0	163.1	150.6	191.5	277.5	209.8
2000	312.6	222.1	237.2	251.5	186.7	212.3	163.9	151.2	202.0	297.5	216.4
2001	310.2	249.0	243.5	257.2	190.0	212.8	170.3	155.4	206.7	305.9	223.5
2002	316.9	268.7	242.9	261.6	201.8	219.6	175.3	154.2	215.1	338.9	232.6
2003	337.6	279.0	237.6	303.0	214.2	222.5	166.9	148.4	214.1	365.1	243.0
2004	364.5	280.9	275.4	292.0	212.9	257.9	179.7	171.2	230.3	376.7	254.8
2005	423.1	313.1	299.2	323.4	227.8	259.0	199.7	167.4	242.3	413.1	276.3
2006	438.3	328.7	319.8	308.8	250.5	278.8	231.0	169.5	260.6	352.9	287.1
2007	507.6	341.8	343.0	337.0	254.4	251.8	229.3	175.1	271.9	371.6	299.4
2008	558.8	365.1	357.3	317.4	270.5	265.3	240.7	175.5	304.5	396.5	315.5
2009	593.5	380.6	389.8	342.3	329.5	283.4	271.9	185.1	338.7	403.7	347.3
2010	587.2	386.5	398.8	386.7	353.4	281.6	268.3	194.0	411.8	403.1	371.2
2011	676.2	425.7	422.4	425.0	369.0	307.4	312.8	212.9	377.1	435.0	387.7
2012	680.2	424.3	450.2	469.4	376.7	325.4	347.7	213.4	377.1	459.3	401.6
2013	681.1	447.9	480.5	477.6	396.6	357.1	384.5	219.0	389.9	488.8	424.3
2014	703.0	468.7	474.1	457.7	426.6	361.7	427.6	226.1	408.1	497.7	436.3
2015	791.0	482.8	483.6	463.2	417.8	356.3	463.3	244.0	404.3	519.1	439.9
2016	837.1	496.2	532.6	581.1	390.1	358.6	488.5	251.9	423.9	542.9	466.1
# of Responses	5	13	22	26	29	14	10	8	25	15	167
Population	2.8	15.0	12.3	10.2	15.8	12.3	4.6	2.7	21.5	5.0	102.8

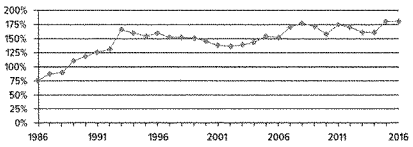
Note 3: Table R-1 is based on all responses received. Year-to-year comparisons should not be performed in these data, but on the change in the index among common survey respondents, as shown in Table R-2. For example, recent values for Region 5 are impacted by differences in survey respondents between 2015 and 2016. Region 5 utilities responding to the 2016 survey indicated a lower average service charge than Region 5 utilities responding in 2015 (Table R-1). However, an analysis of common Region 5 utility respondents between 2015 to 2016, shows a slight increase in the average service charge (Table R-2).

Table R-2: Service Charge Index Change vs. Inflation Rate by EPA Region (1986-2016)

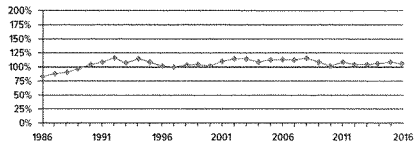
Year	Region 1	Region 2	Region 3	Region 4	Region 5	Region 6	Region 7	Region 8	Region 9	Region 10	National	CPI
1986	14.6%	4.9%	13.3%	4.1%	2.7%	14.6%	7.7%	0.1%	7.7%	8.2%	6.8%	1.9%
1987	22.4%	11.9%	1.4%	6.0%	-3.4%	17.3%	3.6%	0.2%	7.9%	3.7%	5.3%	3.6%
1988	8.9%	9.8%	2.8%	3.3%	2.2%	8.8%	-2.1%	6.5%	15.7%	7.4%	6.9%	4.1%
1989	34.7%	15.6%	6.1%	5.1%	0.6%	5.4%	2.7%	-3.0%	17.1%	8.2%	8.4%	4.8%
1990	20.0%	15.6%	1.9%	5.0%	3.5%	7.6%	-0.8%	9.3%	14.1%	5.4%	8.4%	5.4%
1991	16.6%	13.4%	20.3%	3.7%	3.2%	-4.2%	11.8%	4.4%	14.8%	9.5%	8.9%	4.2%
1992	12.4%	16.9%	2.0%	4.3%	5.4%	1.0%	12.8%	4.4%	11.9%	11.1%	8.5%	3.0%
1993	34.9%	1.4%	1.4%	6.9%	6.1%	9.9%	42.3%	6.9%	10.1%	3.3%	8.3%	3.0%
1994	4.0%	5.0%	2.2%	8.8%	4.0%	2.3%	10.3%	2.8%	6.6%	12.4%	5.1%	2.6%
1995	0.6%	0.9%	-1.3%	4.6%	1.1%	7.9%	-2.8%	6.1%	1.4%	9.2%	2.2%	2.8%
1996	1.8%	4.4%	4.4%	4.0%	2.1%	2.0%	1.8%	0.1%	4.2%	5.3%	3.6%	3.0%
1997	0.4%	1.2%	0.1%	6.0%	-1.8%	-0.6%	6.0%	-0.3%	2.2%	2.5%	1.3%	2.3%
1998	1.6%	3.0%	1.7%	1.6%	0.8%	-1.1%	4.6%	0.5%	5.0%	2.9%	2.4%	1.6%
1999	0.4%	1.5%	0.7%	2.8%	2.4%	-0.6%	2.5%	3.6%	-2.3%	1.9%	0.7%	2.2%
2000	0.1%	1.8%	-0.1%	3.4%	2.3%	2.6%	-2.9%	0.4%	6.0%	7.2%	3.0%	3.4%
2001	1.5%	2.3%	2.6%	3.2%	1.4%	0.5%	3.9%	2.1%	2.1%	2.8%	2.2%	2.8%
2002	1.9%	5.1%	-0.2%	1.9%	6.3%	1.6%	3.2%	-0.8%	3.9%	10.2%	3.6%	1.6%
2003	7.3%	5.3%	-0.7%	5.6%	6.2%	1.1%	1.7%	-3.7%	0.1%	4.7%	3.1%	2.3%
2004	11.8%	2.7%	16.6%	7.0%	-0.5%	14.5%	11.4%	2.9%	5.8%	5.8%	6.5%	2.7%
2005	17.4%	4.6%	6.3%	9.0%	10.6%	4.4%	11.3%	0.2%	4.6%	9.0%	7.3%	3.4%
2006	6.3%	8.0%	6.6%	3.3%	8.9%	7.2%	3.7%	1.3%	4.3%	4.6%	6.0%	3.2%
2007	10.9%	4.3%	6.7%	5.5%	3.0%	-7.5%	0.9%	3.6%	10.0%	5.6%	6.0%	2.8%
2008	5.5%	11.1%	1.7%	1.8%	3.5%	3.6%	11.3%	1.7%	6.4%	2.8%	5.4%	3.8%
2009	6.0%	6.1%	8.5%	5.5%	12.7%	7.2%	5.9%	4.0%	9.9%	3.9%	8.2%	-0.4%
2010	4.4%	2.2%	3.8%	10.7%	6.9%	0.7%	9.0%	-3.4%	4.5%	-2.4%	4.4%	1.6%
2011	5.2%	8.0%	6.3%	4.6%	5.3%	6.8%	9.8%	12.5%	4.0%	9.6%	6.0%	3.2%
2012	4.7%	1.8%	3.3%	2.6%	1.2%	4.3%	8.4%	0.1%	5.3%	4.8%	3.4%	2.1%
2013	4.8%	6.6%	8.7%	2.1%	5.0%	8.6%	10.0%	2.1%	3.8%	5.6%	5.5%	1.5%
2014	2.7%	5.0%	1.6%	5.7%	7.4%	-0.4%	7.1%	3.7%	3.8%	3.3%	4.1%	1.6%
2015	4.2%	2.2%	7.0%	0.6%	7.9%	3.2%	8.5%	8.4%	-0.8%	2.3%	3.1%	0.1%
2016	5.8%	1.2%	2.7%	3.0%	1.0%	1.8%	8.9%	3.1%	2.4%	4.2%	2.6%	1.3%

2016 EPA REGIONAL DATA ANALYSIS

Regional Service Charge Index as a Percent of the National Average (1986-2016)



REGION 1



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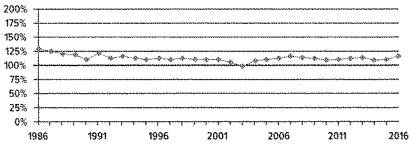

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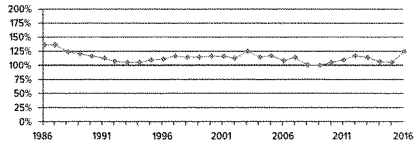

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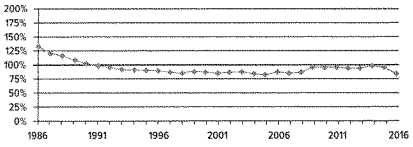

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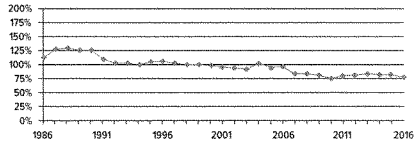

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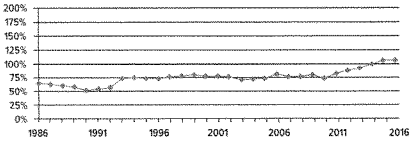

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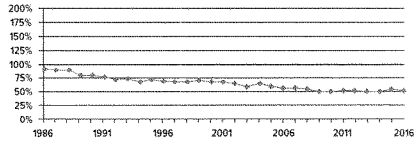

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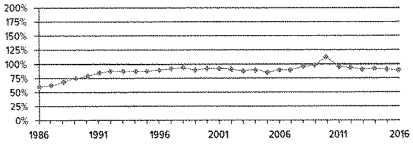

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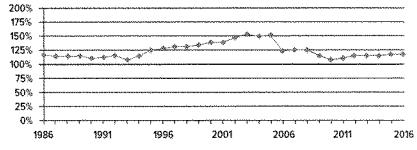


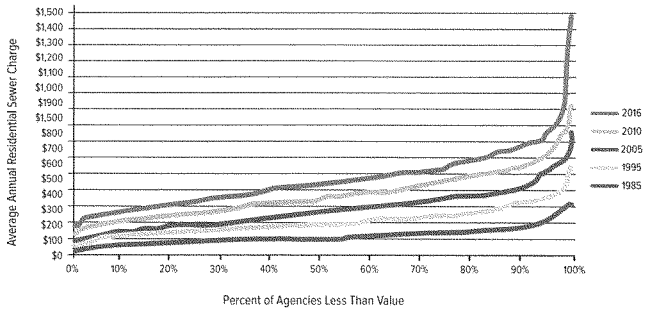
REGION 10

2016 EPA REGIONAL DATA ANALYSIS

Table R-3: Average Annual Sewer Service Charge by EPA Region (1985-2016)

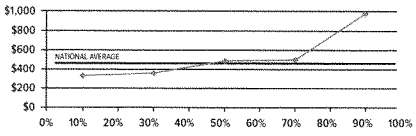
Year	Region 1	Region 2	Region 3	Region 4	Region 5	Region 6	Region 7	Region 8	Region 9	Region 10	National
1985	$71.74	$87.74	$124.46	$142.85	$141.32	$108.90	$65.12	$104.57	$64.87	$118.54	$102.75
1986	$82.23	$92.07	$140.97	$147.95	$145.19	$124.77	$70.12	$104.70	$69.87	$128.23	$109.69
1987	$100.65	$103.02	$142.94	$156.86	$140.29	$146.30	$72.68	$104.95	$75.39	$132.98	$115.51
1988	$109.09	$113.10	$146.69	$152.13	$143.33	$159.47	$74.20	$111.79	$87.50	$142.84	$123.17
1989	$146.94	$130.73	$155.64	$159.89	$144.18	$168.07	$76.20	$108.46	$103.14	$154.60	$133.65
1990	$171.31	$151.08	$158.54	$167.91	$149.25	$180.86	$75.60	$118.51	$117.91	$162.91	$144.84
1991	$199.77	$171.40	$190.65	$175.78	$154.06	$173.30	$84.55	$123.73	$135.39	$178.43	$157.88
1992	$224.52	$200.66	$192.20	$183.28	$162.39	$175.65	$95.38	$129.22	$151.63	$198.31	$171.33
1993	$312.62	$202.08	$214.43	$194.79	$171.21	$192.52	$135.78	$141.67	$166.91	$206.26	$188.12
1994	$314.46	$228.65	$219.33	$209.38	$178.02	$196.97	$145.44	$139.99	$177.98	$231.06	$198.68
1995	$311.61	$221.16	$219.13	$221.46	$183.78	$212.54	$146.26	$149.95	$180.75	$252.36	$203.22
1996	$329.39	$212.09	$228.72	$230.37	$185.35	$217.93	$148.84	$147.90	$188.26	$265.79	$207.28
1997	$318.71	$213.84	$229.04	$241.79	$181.65	$216.85	$157.71	$147.52	$192.36	$272.46	$209.49
1998	$323.37	$220.48	$234.95	$240.56	$182.65	$214.37	$164.92	$149.30	$202.00	$280.25	$213.52
1999	$324.77	$228.57	$236.39	$247.73	$187.89	$212.70	$167.56	$154.73	$196.78	$285.14	$215.61
2000	$321.19	$228.20	$243.75	$258.41	$191.88	$218.11	$168.41	$155.33	$207.56	$305.72	$222.31
2001	$318.72	$255.85	$250.23	$264.27	$195.22	$218.68	$174.99	$159.72	$212.39	$314.30	$229.63
2002	$325.60	$276.08	$249.55	$268.74	$207.32	$225.66	$180.12	$158.41	$220.99	$348.21	$238.95
2003	$346.87	$286.70	$244.16	$311.31	$220.11	$228.64	$171.49	$152.46	$220.01	$375.13	$249.44
2004	$374.54	$288.61	$282.95	$300.02	$218.75	$264.95	$184.68	$175.91	$235.86	$387.05	$261.48
2005	$434.72	$321.74	$307.43	$332.32	$234.03	$266.10	$205.16	$172.02	$248.99	$424.45	$283.91
2006	$450.31	$337.77	$328.61	$317.28	$257.38	$286.47	$237.39	$174.16	$267.69	$362.64	$294.98
2007	$521.61	$351.17	$352.44	$346.23	$261.41	$258.73	$235.62	$179.91	$279.37	$381.80	$307.60
2008	$574.21	$375.19	$367.16	$326.15	$277.94	$272.61	$247.33	$180.30	$312.89	$407.39	$324.11
2009	$609.85	$391.05	$400.52	$351.74	$338.53	$291.17	$279.35	$190.15	$347.99	$414.82	$356.90
2010	$603.38	$397.14	$409.75	$397.34	$363.08	$289.33	$275.64	$199.36	$423.15	$414.22	$381.45
2011	$694.75	$437.43	$433.97	$436.66	$379.11	$315.88	$321.44	$218.77	$387.45	$447.01	$398.54
2012	$698.93	$435.98	$462.55	$482.27	$386.52	$334.36	$357.31	$219.23	$387.48	$471.93	$412.17
2013	$699.85	$460.26	$493.67	$490.74	$407.50	$366.93	$395.11	$225.02	$400.58	$502.29	$435.26
2014	$722.31	$481.57	$487.14	$470.27	$438.32	$371.67	$439.35	$232.31	$419.37	$511.42	$448.39
2015	$812.79	$496.06	$496.90	$475.95	$429.10	$366.07	$476.01	$250.67	$415.45	$533.32	$451.90
2016	$860.09	$510.38	$547.29	$597.06	$401.59	$368.41	$501.97	$258.41	$435.60	$557.88	$478.67
# of Responses	5	13	22	26	29	14	10	8	25	15	167
Population (millions)	2.8	15.0	12.3	10.2		12.3	4.6	2.7	21.5	5.0	102.8

Distribution Trend of Average Annual Residential Charge (National)

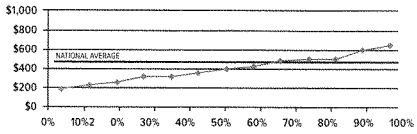


2016 EPA REGIONAL DATA ANALYSIS

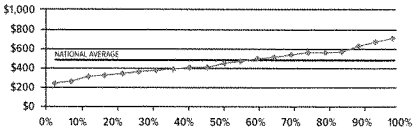
Regional Distribution of Service Charges (2016)
(Charge vs. Percent of Charges Less Than Value)



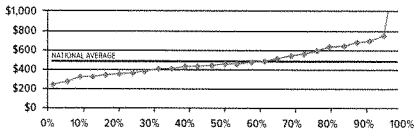
Region 1



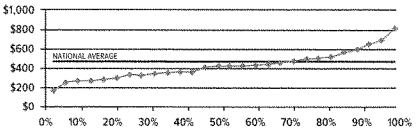
Region 2



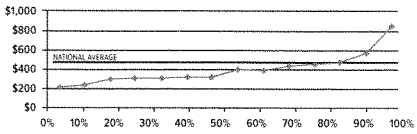
Region 3



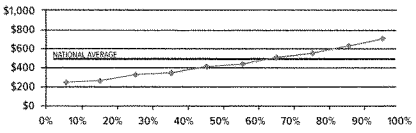
Region 4



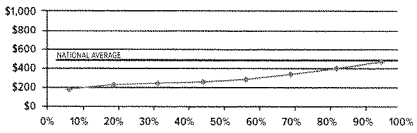
Region 5



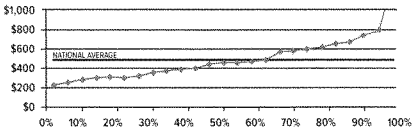
Region 6



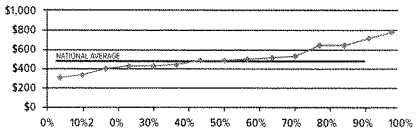
Region 7



Region 8



Region 9



Region 10

Andrew Kricun, P.E., BCEE
Executive Director/Chief Engineer of the
Camden County Municipal Utilities Authority
Board Member, National Association of Clean Water Agencies

SUBMITTED TO:

Fisheries, Water, and Wildlife Subcommittee
Committee on Environment and Public Works
United States Senate

Sen. John Boozman, Chairman
Sen. Tammy Duckworth, Ranking Member

ON THE TOPIC OF:

Closing the Clean Water Infrastructure Funding Gap
June 20, 2017

Camden County Municipal Utilities Authority
1645 Ferry Avenue
Camden, NJ 08104
(856) 583-1223
www.ccmua.org

Overview

A) The Infrastructure Gap Problem

It is self-evident that properly functioning drinking water and wastewater treatment systems are essential to maintaining the public health of our citizens and protecting our environment. Moreover, our industries and commerce depend upon the reliable provision of drinking water and wastewater services. It is no exaggeration to say that society cannot function without reliable drinking water and wastewater services. Yet, in 2017, the American Society of Civil Engineers gave the nation's drinking water infrastructure a "D" grade and wastewater infrastructure a "D+" grade. This is indicative of a very significant vulnerability, and corresponding threat to the public health, the commerce and the environment of our country.

Moreover, recent history, such as the events of Hurricane Sandy has shown us that our existing infrastructure is inadequate to deal with extreme climate events. During Hurricane Sandy and its aftermath, billions of gallons of untreated sewage were discharged into our waterways; drinking water systems were overwhelmed as well. It is not likely that things will improve in the future without significant intervention—our infrastructure continues to age, which will increase the infrastructure gap absent significant increases in investment, and future climate projections indicate that the work of clean water agencies will become more challenging, not easier.

B) Proposed Solutions

In order to protect the public health, the economy and the environment, it is essential that clean water agencies take steps to close the existing infrastructure gap. Below are seven important solutions which CCMUA has found would help to close the clean water infrastructure financing gap:

1) Optimize internal efficiency, including optimized asset management, implementation of an environmental management system, and minimization of costly reactive and emergency maintenance through optimization of preventative maintenance. In these ways, clean water agencies can reduce their operations and maintenance costs, and the cost of new capital, and thereby partially reduce the gap between their funds and their infrastructure requirements.

2) Utilization of State Revolving Funds in order to reduce the annual debt service cost of new capital. The State Revolving Fund (SRF) program is a tremendous aid to clean water agencies in their efforts to reduce the infrastructure funding gap. Camden County, NJ is an especially good example of the vital importance of the SRF program. We used NJ's SRF program, the New Jersey Environmental Infrastructure Financing Program,

to rebuild and upgrade our entire wastewater treatment plant while still holding user rates steady for 17 years, from 1996-2013.

3) Public-Private partnerships also offer an excellent opportunity to reduce the infrastructure funding gap. Tax incentives that encourage private sector investment in clean water infrastructure would be extremely helpful. For example, thanks to tax incentives extant at the time, Camden County entered into a power purchase agreement with a solar panel provider which reduced electricity costs for our ratepayers by over $300,000 per year and reduced our vulnerability to power outages.

4) Public-Public partnerships- Improved performance from clean water agencies can be hastened by developing information sharing programs/mechanisms that facilitate systematic and efficient dissemination of utility best practices across the clean water sector. In addition to best practices, leading clean water agencies around the country can share resources and financing capabilities with those with fewer resources and staff expertise, such as smaller utilities. In this way, the learning curve for best practices can be traversed more quickly thereby improving environmental performance to address infrastructure challenges at a reduced cost.

5) Public education and transparency- Clean water agencies also have an important need to continue to educate the public about the importance of water infrastructure. Through environmental education initiatives, public outreach and transparency in our work and our expenditures, we must help to create ratepayers that understand how essential water infrastructure is to public health and the public good, and who are therefore willing to pay support full cost pricing in order to restore and maintain our water infrastructure.

6) Affordability- Clean water agencies would be helped immeasurably if there were affordability/rate assistance programs available, similar to those available for electricity and heat, to low-income customers. If these programs were available in the clean water industry as well, clean water agencies could have more flexibility to charge the full cost rates that they need to charge in order to address the infrastructure investment gap with the assurance of assistance for their low-income ratepayers for critical water services.

7) Stormwater fees in combined sewer communities- In communities with combined sewers, when rainwater mixes with sewage, the mix becomes wastewater itself that cannot be distinguished from the original sewage and must be treated in exactly the same way. So, the ability to charge a fair rate for impervious surfaces would enable clean water agencies to more

fairly apportion the true costs of treating combined sewage flow among their customers.

In summary, clean water agencies are not looking for a "handout", but for a "hand up", a helping hand to supplement our own efforts to meet our infrastructure obligations. We are hoping that:

- the State Revolving Fund program (SRF) can not only be preserved, but expanded
- incentives to private sector entities to invest in clean water infrastructure can be enhanced
- programs allowing rate assistance for lower income families could be implemented,
- existing financing tools and programs of the federal government be maintained or enhanced, and
- stormwater fees in combined sewer communities would be allowed.

Increased investment in our nation's water infrastructure is not only absolutely necessary to protect our public health and the environment, but it will also have the happy corollary effect of creating more jobs both to construct the new grey and green infrastructure but also to help maintain it as well. Just as President Roosevelt did with the Civilian Conservation Corps and President Eisenhower with the construction of the Interstate Highway system, there is a tremendous opportunity to close both the water infrastructure gap AND the job creation gap at the same time.

About the Camden County (NJ) Municipal Utilities Authority

The Camden County Municipal Utilities Authority (CCMUA) operates an 80 million gallon per day wastewater treatment plant, and a 125-mile regional sewer system, that provides sewage treatment and conveyance service to the 500,000 residents of Camden County, NJ. Camden County consists of the county seat of Camden City, one of the most economically distressed cities in the nation, and 36 suburban municipalities of varying economic wherewithal. The CCMUA discharges to the Delaware River and is, after Philadelphia and Wilmington, the third largest point source discharger to the Delaware. In addition, the CCMUA's treatment plant is only about one hundred yards from a residential community of about 1800 people. Therefore, the CCMUA faces four main challenges:

- optimizing environmental performance to optimize the water quality of the Delaware River

- minimizing odor impact on the adjoining neighborhood

- restoring and preserving our infrastructure, and reducing our vulnerability to severe storms

- accomplishing all of these goals while minimizing costs to our ratepayers, particularly those living in the economically distressed city of Camden

Optimization of Internal Efficiency

In order to accomplish these triple bottom line goals, the CCMUA decided to implement an Environmental Management System (EMS). An EMS is a management system approach that assists a utility to (1) identify its main organizational priorities and then (2) harness its wherewithal, in an organized, systematic way to meet those priorities on an ongoing, sustainable basis. The purpose of the EMS is to optimize the efficiency of the agency toward meeting its main priorities, and ensuring that optimal performance is sustained. It is not simply a project with a finite endpoint but rather an ongoing philosophy/system adopted by the utility to sustain optimal performance and to continually look for opportunities to improve.

As stated above, the CCMUA's main goals were (1) optimization of environmental performance, (2) minimization of adverse odor impact upon its neighboring community and (3) optimal cost efficiency. The CCMUA systematically went through every aspect of its operation and identified opportunities to improve performance through improved operations and maintenance and also through capital improvements. As a result, the CCMUA:

- significantly improved the water quality and dissolved oxygen content in the CCMUA's zone of the Delaware, and

- reduced odor violations from an average of one per month, to less than one per year, even though the plant is, as stated above, only 100 yards away from a residential community, and

- accomplished this while holding rates steady for 17 years. Specifically, the CCMUA's rate was $337 per household per year in 1996. In 2017, the CCMUA's rate is now only $352 per household per year. However, when factoring inflation in over the 21-year interval, from 1996 to 2017, this represents about a 30% rate decrease for the CCMUA's customers.

Therefore, by improving internal efficiency, the CCMUA was able to significantly improve its environmental performance without any cost impact to its ratepayers. To help achieve this outcome CCMUA leveraged the State Revolving Fund.

The Vital Importance of the State Revolving Fund in the CCMUA's Success

As stated above, the CCMUA was able to significantly improve its water quality and odor control performance while holding rates stable for 17 years. The operational efficiencies

introduced through the EMS were a big part of this success. However, this could never have been accomplished without judicious use of New Jersey's State Revolving Fund, the New Jersey Environmental Infrastructure Trust (NJEIT).

The NJEIT offers loans that are, in sum, 75% interest free, and spread out over 30 years. This results in very low annual debt service payments for new capital infrastructure. Since new equipment usually reduces maintenance and increases energy efficiency, the savings in operations and maintenance costs equaled or even exceeded our annual debt service payments. In this way, the CCMUA was able to rebuild and upgrade all of the main process units of its wastewater treatment plant, thereby optimizing its environmental performance, and build new odor control systems, thereby minimizing its odor impacts upon the adjoining community, while still reducing the total sum of its O+M costs and annual debt service.

The importance of the SRF in accomplishing this cannot be underestimated. The low interest rates offered by the NJEIT allowed the necessary capital improvements to improve environmental performance and without raising rates for our customers. In fact, the CCMUA was able to offer a host community discount for homeowners in the economically distressed City of Camden while still holding rates steady for its suburban customers. The State Revolving Fund program is a perfect example of how clean water agencies don't need a handout, but do really need the helping hand offered by the low interest loan program. It made all the difference for the Camden County MUA in reducing its infrastructure funding gap.

Public-Private Partnerships- Judicious use of public-private partnerships has also helped the Camden County MUA close its infrastructure funding gap. For example, we entered into a power purchase agreement with a private entity for the installation of solar panels at our treatment plant. The private entity designed, installed, owns, operates and maintains the solar panels, and charges the CCMUA 4.8 cents per kilowatt/hour, which is less than half of what we are paying for normal electric service. Thus, we were able to save about $300,000 per year in electricity costs for our ratepayers without spending a penny for the solar panels.

We also entered into a design/build contract with another private entity to construct a biosolids digester and combined heat and power system to generate green energy for our plant from our biosolids. There are many instances in which a public-private partnership can result in a more favorable apportionment of risk that can make the difference between a go, or no go, for a project.

Public-Public Partnerships- In the case of public sector utilities, at least, there is a sincere willingness to share information with fellow utilities. And, in many instances, the problems faced by one utility has already been solved by another utility in the industry. The National Association of Clean Water Agencies (NACWA) is seeking to take advantage of that largely untapped resource by creating a peer to peer network which will facilitate the transfer of knowledge between higher capacity utilities and lower capacity utilities in order to accelerate and shorten the learning curve. Facilitating the sharing of

peer to peer information and resources will help to reduce the infrastructure gap as well as ensure that utilities get to the right answers to their problems more quickly and more cost effectively. If one utility develops a best practice that reduces cost or improves environmental performance, and if 100 more utilities learn about this practice through an effective system of information dissemination, then the benefits to the ratepayers, the infrastructure and the environment are multiplied 100-fold.

Improving Education and Transparency- It is essential for clean water agencies, environmental regulatory agencies and clean water advocacy organizations to raise awareness for the average citizen/ratepayer about the importance of clean water infrastructure to the public health, the economy and the environment. This needs to be done via environmental education initiatives and ongoing direct engagement with our ratepayers. Increased transparency of our operations is also necessary so that ratepayers understand where their rate dollars are going and how they are being spent.

In addition, we must work to educate the youth of our nation about the importance of our water resources and our clean water infrastructure as they will be the ratepayers and environmentalists of the future.

Affordability- The Camden County MUA services 37 municipalities, consisting of the County seat of Camden City and 36 suburban municipalities. There is great disparity between the largely affluent suburban towns and Camden City, which is one of the poorest cities in the United States. Our utility is a good example/case study of the importance of developing supplemental rate assistance for water service, similar to those available for electricity and gas services, to lower income families. If such programs were in place, then the CCMUA and its fellow clean water agencies could charge the rates necessary to restore and preserve our infrastructure without adversely impacting the most financially vulnerable members of our community. Again, this is another example of clean water agencies just needing a helping hand to enable them to maintain their infrastructure and meet their federal Clean Water Act obligations.

New Job Creation and Job Training

Restoring and preserving our clean water infrastructure will not only enable clean water agencies to fulfill their missions to protect the public health and the environment, but will also result in the creation of a significant number of construction jobs. In addition to construction jobs for typical grey infrastructure, the creation of green infrastructure offers the added bonus of creating new green space maintenance jobs which have low barriers to entry.

Conclusions and Recommendations

In summary, I offer the following conclusions and recommendations:

1) There is a very significant water infrastructure gap that exists at present, even under present climate conditions.

2) This gap, if not dealt with, will only widen as infrastructure continues to age and climate conditions become even more unfavorable.

3) Dealing with the infrastructure gap will require (a) optimized efficiency from clean water agencies, (b) continued economic support from Federal and State governments in the form of support for State Revolving Funds and tax incentives for private partners and (c) support from ratepayers for a fair rate needed for preservation of our water infrastructure on a sustainable basis.

4) There is an opportunity for a "win-win" in dealing with the infrastructure gap as construction of new grey and green infrastructure will also create jobs at a time when they are badly needed in our economy. Just as President Roosevelt did with the Civilian Conservation Corps and President Eisenhower did with the construction of the Interstate Highway system, there is an opportunity to solve an infrastructure problem AND a job creation problem at the same time.

5) Environmental Management Systems are an excellent way to optimize the performance of clean water utilities on a sustainable basis, and should continue to be promoted by regulatory agencies, utilities and clean water advocacy agencies.

6) In order to better preserve our precious water resources and optimize our clean water infrastructure, the best practices of leading clean water utilities should be widely disseminated to as many other utilities as possible as quickly as possible in order to accelerate the learning curve of the industry and reduce the infrastructure gap.

7) Clean water utilities, regulatory agencies and clean water advocacy agencies must continue to make environmental education a top priority in order to gain needed support for infrastructure improvements from ratepayers, and to help develop the environmentalists and ratepayers of the future.

8) Affordability programs for lower income families will enable utilities to charge full cost rates that will permit the restoration of infrastructure that is required, without unduly burdening the most economically vulnerable members of the community.

9) Job creation will closely parallel investment in water infrastructure and is an added bonus to restoring our clean water infrastructure.

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, CHICAGO, ILLINOIS

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 No. 1. 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 State 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 3 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.

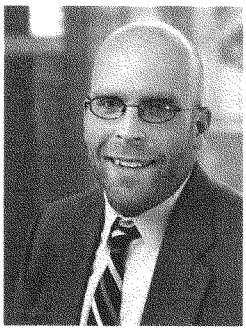
Mr. ELLIS. Absolutely.

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:]



Josh Ellis
Vice President
Metropolitan Planning Council (MPC) of Chicago

Josh Ellis is a Vice President of the Metropolitan Planning Council (MPC) of Chicago and has worked with the MPC since 2006. He completed his MA in Middle Eastern Studies and MPP in Public Policy at the University of Chicago. In addition to his work at the MPC, Mr. Ellis is a member of the National Parks Conservation Association and sits on the Board of Directors at PODER, which supports Spanish-speaking adult immigrants through tuition-free English education and job training programs.

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Senate Environment and Public Works Committee
Written Testimony of Josh Ellis
Metropolitan Planning Council, Chicago
July 20, 2017

Good afternoon. My name is Josh Ellis. I am a Vice-President of the independent Metropolitan Planning Council. I am pleased to be here today and to have the opportunity to present information and ideas to Senate Environment and Public Works Committee.

The Metropolitan Planning Council is a Chicago-based not-for-project organization. Since 1934, MPC has been dedicated to shaping a more equitable, sustainable and prosperous Chicago region for everyone. At MPC we recognize the importance of our water resources for their ecological, recreational, and economic value. We also recognize that sound infrastructure policies and timely infrastructure investments are critical for protecting and fully utilizing our water resources and for supporting economic activity.

MPC very much appreciates the Committee's investigations into America's water infrastructure funding shortfall and the development and use of innovative financing and funding options.

140 South Dearborn
Suite 1400
Chicago, IL 60603

P 312 922 5616
F 312 922 5619
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A National Infrastructure Bill

I would like to start with expressing MPC's strong support for federal infrastructure investments. There is a clear need to repair, replace and modernize our aging infrastructure. I am sure the Committee is aware that the 2017 Infrastructure Report Card, issued by the American Society of Civil Engineers, gave our public infrastructure a grade of D+. Investments in well-planned infrastructure projects will improve quality of life for individuals, support business activity, and reduce environmental, health and safety risks. And infrastructure investments provide significant economic returns. To cite an example from the Great Lakes region, the Northeast Ohio Regional Sewer District undertook a set of wastewater infrastructure improvement projects with a cumulative cost of approximately $3 billion. Based on a study carried out by Cleveland State University, the District estimates that this investment will lead to more than 30,000 jobs in the Cleveland area and return $2.63 for every $1.00 invested.

A substantial Federal infrastructure program will in and of itself produce important results, and will also spark investments by States and cities. I do think, however, we need to be thoughtful about how the programs are set up and administered. We need to make sure the programs do not inadvertently leave out small and medium-sized communities. These communities have aging infrastructure and significant needs, but often have limited capacity to plan and engineer projects and finance projects. Also, we need to utilize program structures with streamlined processes so projects can be completed

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Suite 1400
Chicago, IL 60603

P 312 922 5616
F 312 922 5619
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as quickly as possible, and with the investments resulting in the maximum scale of in-the-ground infrastructure improvements.

As a complement to a substantial infrastructure bill, we also want to be thinking of ways we can most effectively use resources currently available. Perhaps we can derive the most benefit in the shortest amount of time by considering possible, feasible improvements to existing funding and financing tools.

Tools and Approaches for Budgeting and Infrastructure Management

There is a perception held by many that drinking water, wastewater, and stormwater service providers have a "fix it as it fails" approach to managing infrastructure. People can have this perception because they have seen things like sinkholes and emergency water main repairs. However, many utilities are striving to get out ahead of infrastructure problems, to proactively perform maintenance and prevent the need for costly and disruptive emergency repairs. Following is a list of tools and approaches that are already in use in some places:

Full Cost Pricing – Many communities and utilities have rate structures which do not provide sufficient funds to fully cover debt retirement, preventive maintenance, repairs, and contribution to a capital fund for replacements and modernization. There are a number of reasons for this, but a primary factor is

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F 312 922 5619
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rate increases are perceived as something unpopular with voters. Elected officials who are typically on 4-year election cycles are reluctant to push forward with rate increases knowing it could dampen their chances of re-election. However, there are significant real-world impacts of inadequate service rates and under-funded budgets. The most obvious effect is maintenance is deferred and in some cases capital and major repair projects are postponed to some unspecified time in the future. It should not come as a surprise that things break if the budget for maintaining the infrastructure was inadequate.

It is not easy for a utility to raise rates and charge amounts that will support work that needs to be done. However, one step that would be valuable is continued outreach and information dissemination about the value of water and what it really costs to deliver water and wastewater services. Some ratepayers may not be aware of all the costs behind the work and the investments that are necessary for clean, safe drinking water to always be delivered to their tap, and for their wastes to go away and be managed in an effectively functioning wastewater system. Raising awareness about the full cost of water services may make it easier for appropriate rates to be charged.

Another factor that affects rate setting is the local political environment. Mayors and trustees on a 4-year election cycle are often very reluctant to raise rates. This is understandable, the elected officials do not want to incur the wrath of voters, but the result is rates that are too low and revenues that are insufficient. The Federal government and States should consider ways to

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F 312 922 5619
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detach rate-setting from political processes. For example, could an independent public service commission be responsible for approving rates? Some State already have such commissions.

Asset Management Systems – Asset management is an approach used by well-managed utilities to ensure adequate maintenance is carried out to prevent breakdowns and disruptions. Here's how it works: the utility exhaustively inventories its assets, including the condition and age and useful life. The asset management system also notes what routine maintenance is needed. The system then identifies and schedules preventive maintenance to routinely maintain and update infrastructure components and in this way "fix things before they fail." Another important advantage of asset management systems is by comprehensively identifying maintenance and replacement needs the utility can more fully and realistically identify costs that should be reflected in the budgeting process. The detailed information about operation and maintenance costs can help justify an adequate rate structure.

Water Loss Audits – One issue that many drinking water service providers face is water loss. What can happen is the utility draws water from a source (groundwater or a lake), provides treatment for the water, and then delivers the finished water out to a distribution system. But then water is lost in the distribution system. High quality, treated drinking water is leaked out. This problem is particularly prevalent in older systems with aging water mains. Water loss can also be associated with inaccurate metering of customer consumption or theft of service. A check of the amount of water sent to the

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F 312 922 5619
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distribution vs. the amount of water metered and billed for can show enormous amounts of water are being lost. For example, available information indicates the amount of water lost *each week* in Northeastern Illinois would more than fill the 100-story Willis Tower building.

An approach drinking water providers can use to get a handle on this problem is to regularly conduct water loss audits. The American Water Works Association has established a standard method for water audits, which is referred to as the M36 method. Carrying out such audits and following up on findings to fix leaks, repair and replace lines, and ensure accurate metering can help conserve valuable water resources and can help ensure drinking water utilities are receiving the fee revenue needed to operate and maintain their systems.

Stormwater Utilities – Many public services are provided by a service utility, which charges a fee for service and which uses the fees collected to operate and maintain the system. Electric companies and natural gas utilities are examples. Many drinking water providers are set up as utilities, with rates charged based on per gallon water use. An outlier with regard to such systems is stormwater management.

Stormwater systems provide important services to homes and businesses, collecting and managing rainfall runoff so streets and buildings are not flooded. Stormwater programs also help to reduce the pollution that can be caused by runoff that has picked up litter and pollutants as rainwater runs

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across streets and parking lots and lawns. Stormwater systems provide a service to the public similar to drinking water and wastewater utilities; however, in many places the stormwater management services are financially supported in the same way. Stormwater service providers often do not charge a fee for stormwater services; the service costs are instead supported by property taxes or another local government funding mechanism. Thus the stormwater budget competes with the police department, the fire department, and other municipal services for the limited dollars that are available.

The solution to this is for local decision-makers, with State support and authorization, to form stormwater utilities and charge fees for stormwater services. The fees can be set up in a number of ways, but what often is the most defensible fee system is to charge property-owners a fee based on an estimate how much stormwater they are generating. This is not a brand new idea, there are over 1,500 stormwater utilities presently operating in the U.S. But they are still the exception, not the rule. One reason there are too few stormwater utilities is the reluctance of elected officials to establish a new fee, which for some could be perceived as a new tax. The Federal government and States need to support the establishment of stormwater utilities. One thing States can do is make sure they have given cities and towns and counties the authority to establish stormwater utilities.

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P 312 922 5616
F 312 922 5619
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State Revolving Loan Programs for Water Infrastructure

Implementing a program established in the Federal Clean Water Act, States administer low interest loan programs for drinking water and clean water (stormwater and wastewater) infrastructure projects. These are invaluable programs, helping communities address critical needs. MPC and most communities across the U.S., would urge Congress to continue to fund and support the State Revolving Fund (SRF) loan programs.

While the programs as currently carried out are extremely valuable, there are ways the programs could be fine-tuned to improve their effectiveness. Following are observations and recommendations related to drinking water and Clean Water SRF programs:

Best Practices - The SRF program works well as a whole, and certain States have implemented features that are innovative or especially effective. However, there is not a compiled inventory of best practices across States and in many cases State agencies busy operating their programs are slow to adopt new practices shown to be effective in other places. The Federal government may be able to do more to catalog best practices and facilitate their adoption across States.

More Like a Bank – SRF programs would be more accessible and more effective if the process for receiving a loan functioned more like steps an entity would take to get a loan from a bank or other lending source. In

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F 312 922 5619
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particular there is a need to speed up the process from envisioning a project to developing an approvable loan package to receiving the financing. Presently this process can take up to 3 years. Meanwhile the infrastructure is crumbling and local officials are getting ready to move on to other things. Some communities go to the bond market for financing because they perceive that approach as being faster or easier than SRF processes. Applicants need reasonable time frames and certainty so they can balance construction schedules (including seasonality and weather), costs to retain consultants, and getting critical infrastructure needs addressed.

Who Administers the SRF Program – In many States the SRF program is administered by the State environmental regulatory agency. In one way this makes sense -- the environmental agency already interacts with regulated entities and has the experience and knowledge to review plans and designs. However, the State environmental agencies are typically not finance experts. Removing the SRF program from the environmental regulatory compliance agency within each State may be one approach for accelerating loan processes and managing the financing aspects of the loan fund and loan projects. In Indiana, for example, the SRF programs are implemented by the Indiana Finance Authority, with technical project reviews carried out by the Indiana Department of Environmental Management.

Developing Loan Application Packages – There is a substantial amount of work that goes into developing an approvable SRF loan application package, including financial documentation to show project costs and the scheme for

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F 312 922 5619
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loan repayment. The application package must also include detailed engineering plans and specification for the project to be implemented. The amount of work to be done and the costs associated with this work, for example hiring an engineering company to develop technical plans and specifications, can be more than a low-income community can take on. It would be advantageous for SRF programs to provide grants or at least advance financing for the engineering work needed to plan a project and prepare an approvable application. A program feature such as this would allow more communities to participate in the program.

Fiscal Sustainability Plans – Since the passage of the Water Resources Reform and Development Act of 2014 communities receiving Clean Water SRF funding must develop and implement a Fiscal Sustainability Plan. These plans will have many of the features of an asset management plan and program, and should help provide for better infrastructure maintenance and budgeting. Currently the Drinking Water SRF program does not require asset management programs or Fiscal Sustainability Plans. Ensuring that drinking water loan recipients are implementing a Fiscal Sustainability Plan would be a valuable program enhancement.

Work on Private Property - One factor that contributes to water loss for drinking water suppliers, and to infiltration into wastewater sewers, is leaky water lines and sewer laterals on private property. These connectors between homes and public infrastructure are frequently old and not well-maintained. Part of the reason for inadequate maintenance is the property-owner thinks

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P 312 922 5616
F 312 922 5619
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it's the city's problem and the city thinks it's the property-owner's problem. A valuable enhancement to the drinking water and clean water SRF programs may be to make it clear that SRF financing can be used for work to repair or replace water lines and laterals on private property. For the drinking water program this could have significant public health consequences as in many communities there are lead pipe water lines that need to be replaced. There may also be cases where it would be environmentally valuable for the Clean Water SRF program to support nonpoint source projects on private property, such as streambank stabilization or buffering. Significant benefits can be realized if SRF programs can be made available to address these types of public needs situated on private property.

A further enhancement could be to allow a water or wastewater utility to hold an SRF loan assigned to private property improvements. The utility could then offer the private property customer a portion of the loan for lead line replacement or lateral repair and collect the costs of loan repayment as an add-on to the water or sewer bill. This would relieve the homeowner of holding a loan, but allow repair now with payment spread over time.

USDA Rural Utilities Service – USDA administers programs that provide much-needed infrastructure or infrastructure improvements to rural communities. These programs include water and waste treatment, electric power and telecommunications services. These services play a critical role in helping to expand economic opportunities and improve the quality of life for rural residents. These programs complement SRF programs and should not be

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perceived as redundant or duplicative. The USDA and SRF programs address fundamentally different water management challenges; both need to be supported to address crumbling infrastructure issues and support allow for economic growth and environmental protection.

Flooding – The State of Illinois enacted the Urban Flooding Awareness Act, which called for a study of the extent and cost of flooding in urban and suburban areas. The State-wide study, and an earlier study focused on Cook County carried out by the Center for Neighborhood Technology, found there is very extensive flood damage from storms, even when the event is not declared to be a disaster. The studies also found that disadvantaged neighborhoods often sustained some of the greatest flood damages.

The State-wide flooding awareness report offered several recommendations to better address urban flooding. One recommendation was the Federal government and States should explore grant or revolving loan opportunities to support implementation of local cost sharing mitigation programs for residents impacted by flooding, to evaluate stormwater system capacity and flood risk, and to encourage stormwater management planning. This should be a corollary program, not a component of the already over-stretched Clean Water SRF program.

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Chicago, IL 60603

P 312 922 5616
F 312 922 5619
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Governance and Affordability

Improving funding and financing can go a long way toward helping to address America's crumbling infrastructure issues. However, fixing the money will not necessarily fix all the problems. Governance, and specifically fragmentation of governance, is a huge problem. In many areas there are numerous, relatively small, relatively localized water and wastewater utilities. For example, there are more than 400 community water supply systems in Northeastern Illinois (see Figure 1).

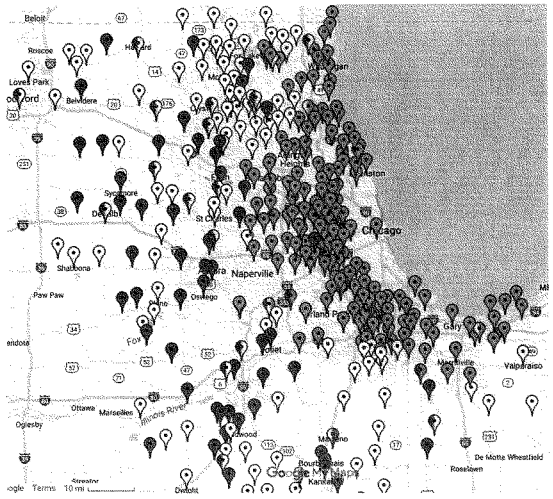

Figure 1 – Community Water Supply Systems in the Chicagoland Area

There are reasons a municipality may wish to operate its own water or wastewater system, including ensuring that community members receive the

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services they need. However, having many small utilities in a particular geographic area can lead to inefficiencies and lost opportunities. For example, there can be economies of scale operating a relatively larger treatment plant vs. operating many smaller plants. A larger utility may be able to access financing with more favorable terms. A 2008 study on the economic impacts of utility coordination and consolidation in the Lehigh Valley in Eastern Pennsylvania found that consolidation from 40 separate utilities to one regional utility would result in an average household savings of $260 per year, and a total savings regionally of $56 million per year by 2020.

Utility fragmentation can compound underlying environmental, economic and equity issues. For a community whose population is declining, which is common in some cities and many inner-ring suburbs, as well as many rural communities, or for communities where the remaining population is increasingly uniformly poor, there is simply no revenue base – incomes, property values, sales proceeds, billable water consumption – to generate sufficient resources to manage the water and wastewater system. If a community has shrunk by 10,000 people, but the system of pipes, pumps, water towers, etc., has not shrunk, you have fewer people, and often poorer people, trying to pay to maintain the system. A responsible water manager would try to pay the full costs of providing service, but that only leads to higher and higher water rates.

In cities across the United States, water affordability is becoming an increasingly critical issue. Mass shutoffs in Detroit, Michigan resulted in the

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termination of service for 50,000 households since the start of a campaign in 2014 to shut off water for delinquent residents. In Philadelphia, Pennsylvania an estimated 227,000 customers, or 4 out of 10 water accounts, are past due. Atlanta, Georgia and Seattle, Washington have some of the highest water rates in the country at $325.52 and $309.72 per month for a family of four, respectively.[1]

If there are disadvantaged households where affordability is an issue, households to which a utility might want to provide a rate reduction, it is more feasible that the utility to absorb the affordability rate reductions if there is a large ratepayer base with income diversity.

The issue of water affordability is an important one. The size of a water or wastewater utility and the size and income of the ratepayer base can affect the ability of the utility to maintain its systems and prevent breakdowns, and can have affordability impacts on ratepayers. This is not an urban, suburban or rural issue, this is systemic across many parts of the U.S.

It is time to start thinking hard about modernizing the governance of water and wastewater systems. There are many options available to communities that have been tested and proven to be successful; all have pros and cons. Options include consolidation of neighboring utilities, creating governance independent of the municipality, public-private partnerships, and privatization.

[1] Elizabeth A. Mack1 and Sarah Wrase. A Burgeoning Crisis? A Nationwide Assessment of the Geography of Water Affordability in the United States

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There are political factors that may affect decisions to collaborate or regionalize, but there are also very practical considerations related to making a change. For a community struggling to get through today, it is difficult to find time and resources and expertise to assess options for the future. I would recommend that the Federal government should not mandate consolidation, privatization, or other organizational changes, but can encourage, incentive and reward communities for taking steps to ensure that they're choosing the best management option for themselves. Policy approaches might include:

- Convening a task force on water utility governance, and commission a study on the phenomenon of shrinking population, lower incomes/ revenues, and higher maintenance costs.
- Allowing that States make grants available for management studies (i.e. consolidation, privatization, etc.) through an SRF set aside program.

Actions that can be taken to facilitate regional coordination or promote the consolidation of small utilities, where appropriate, can be an important component of efforts to maintain and restore our nation's deteriorating water and wastewater infrastructure.

Additional Issues of Interest to the Committee

Rivers/Riverfronts – Historically many U.S. cities were established at strategic locations adjacent to rivers. Businesses were built up next to the waterways. The rivers facilitated trade and transportation, and were a centerpiece of the community's economy. However, over time other forms of transportation

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became prevalent. Some businesses closed. The rivers became polluted and people did not want to recreate on the rivers or perhaps did not want to even see the rivers.

We are now on the precipice of another major change in how rivers are viewed and their importance to local economies. Cities are rediscovering their rivers and redeveloping along riverfronts. Recreation on the rivers is proliferating. Chicago is a prime example, with the extensive efforts to create a Riverwalk and promote riverfront businesses. Chicago is far from alone, cities across the country are thinking this way. However, there are institutional factors that may be restraining come communities from taking full advantage of river-related opportunities.

Essentially all urban river renewal projects from Chicago to Little Rock, New York to Spokane – have been municipally- or regionally-led. In some cases the Federal players (Corps of Engineers, Coast Guard, EPA, Fish & Wildlife) have needed to be pulled along. Federal policy to more proactively and systematically support rivers projects would be very beneficial. One idea would be a Federal interagency task force to establish a coordinated package of federal programs, resources, etc., for urban river renewal. The Federal government can also help communities explore and take advantage of opportunities to leverage private investment for public good.

I suggest perhaps a Federal interagency task force to establish a coordinated package of federal programs, resources, etc., for urban river renewal.

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Revitalizing river corridors can help connect downtowns with lower income neighborhoods, rejuvenate older industrial areas, provide recreation opportunities, and foster progress toward environmental goals. The Federal government can be a leader in moving forward to realize this vision.

Invasive Species – An issue important in the Great Lakes region is aquatic invasive species. You may have seen photos of Asian Carp in the Mississippi River Basin and the Illinois River flying out of the water. These non-native fish disrupt recreational activity and wreak havoc on the ecosystem. Observing how these species have moved in and dominated inland waterways, there is fear Asian Carp will work their way into the Great Lakes, causing huge ecosystem and economic impacts. In fact a Silver Carp was recently found in the Calumet River just 8 miles from Lake Michigan. Aquatic invasive species can also move in the other direction, with non-native fish that have gotten in the Great Lakes, transported by ballast water, finding their way into the Mississippi River basin.

There has been extensive work done to try to control Asian Carp populations, and to prevent the migration of invasive species between the Upper Mississippi Band and Lake Michigan and Lake Michigan. However, the threat continues. Federal action to limit the migration of invasive species is critical. The Metropolitan Planning Council strongly supports the following:

- The U.S. Army Corp of engineers has completed a study evaluating measures to control Asian Carp migration at the Brandon Road Locks in Illinois. This report was completed by the Corps to analyze alternatives,

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describe a tentatively recommended plan, and start a process to gather input from stakeholders and the public. This report has been held back by the Administration. It needs to be released to allow for review and comment by affected businesses and governmental units and people in Illinois and the other Great Lakes States.

- Work should continue to evaluate what additional controls may be appropriate to control the migration of carp and other species both into the Great Lakes and from the Great Lakes.
- The waterways in Illinois have great economic value for shipping and transportation. Many businesses move raw materials and goods via the rivers. Currently, some of the lock systems are relatively old and they are not sized or designed for some of the barge traffic on the rivers. MPC foresees a terrific opportunity to study possible infrastructure improvements at the locks that would both increase transportation efficiency and control the migration of invasive species. There is no reason these two objectives should be considered separately. There can be valuable synergies by considering these objectives together.

GLRI – The Great Lakes Restoration Initiative has supported many extremely valuable projects which have resulted in great strides toward environmental goals. Projects have involved many diverse groups and addressed many different aspects of Great Lakes protection. Having healthy lakes provides tremendous recreational opportunities and forms a strong foundation for business activity. GLRI is a complement to other Federal and State programs, such as SRF, and is structured to allow creativity and produce results-oriented

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projects. The Metropolitan Planning Council ardently requests and recommends continued funding for the GLRI.

Nutrient Trading – Nutrients are a category of pollutants that can cause significant water quality problems. EPA, States, and other water resources stakeholders are seeking to reduce loadings of nutrient parameters, particularly phosphorus and nitrogen, to prevent algae blooms and ensure water quality can support healthy, diverse aquatic communities and recreational activity. Nutrient loadings from the sources in the Upper Mississippi Basin are contributing to Gulf of Mexico hypoxia concerns.

Nutrient trading is a concept under which parties work together to create a "nutrient market" to plan and implement control measures whereby the desired load reductions are achieved at the lowest cost to society. For example one large plant may complete an upgrade to provide a very high level of treatment, and then one or more smaller plants may not have to make expensive upgrades. It will be beneficial for Federal policy to allow and support nutrient trading program development, including trading between wastewater treatment plants within a State, trading between facilities in different States, and trading between wastewater plants and nonpoint sources such as agricultural operations. Endorsing nutrient trading can potentially and optimize cost-effectiveness and accelerate progress toward water quality protection goals.

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Conclusion

As I conclude my testimony I would like to acknowledge input provided by knowledgeable professionals in Illinois that contributed to the ideas and information I have presented today. On June 9 the Metropolitan Planning Council convened a brainstorming session to discuss key issues, best practices, and innovative ideas related to the topics you are focusing on today. The attendees who contributed valuable input during this brainstorming session and their organizations are listed below – please note that listing them here does necessarily signify that they endorse all the ideas I suggest above.

Thank you for the opportunity to provide this testimony. The Metropolitan Planning Council sincerely appreciates the time and thought you are putting into addressing our nation's water and wastewater infrastructure issues.

Hopefully and thankfully submitted,

Josh Ellis
Vice President
Metropolitan Planning Council
140 S. Dearborn, Suite 1400, Chicago, IL, 60605
jellis@metroplanning.org
312.863.6045

MetropolitanPlanningCouncil

Participants in the June 9, 2017
Water and Wastewater Brainstorming Session

Christopher King, Robinson Engineering
Luis Montgomery, 2IM Group, LLC
Aaron Koch, City of Chicago
Nora Beck, Chicago Metropolitan Agency for Planning
Tom Kotarac, Chicago Metropolitan Agency for Planning
David St. Pierre, Metropolitan Water Reclamation District of Greater Chicago
Andrew Szwak, Openlands
Paul May, Northwest Suburban Municipal Joint Action Water Agency
Ryan Wilson, Elevate Energy
Robert Hirschfeld, Prairie Rivers Network
Cari Ishida, Carollo Engineering
Steve Frenkel, Current
Molly Flanagan, Alliance for the Great Lakes
Cindy Skrukrud, Sierra Club
Peter Wallers, Engineering Enterprises, Inc.
Pat Gleason, Illinois Rural Community Assistance Program
Sarah Cardona, Metropolitan Planning Council
Bob Newport, Metropolitan Planning Council

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Senator INHOFE. Thank you, Mr. Ellis.

We will now begin 5 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 decisionmakers in making the case for infrastructure investments.

Hard 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 decisionmakers 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 decisionmaking. 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 10 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 set asides 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 10 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 5 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 5 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 people's 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 work force 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 2 to 3 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 work force 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. Last, 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 wastewater 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 wastewater 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 wastewater and a D grade for water infrastructure. An emergency repair after a failure costs 5 to 7 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 5 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 5 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 moneys 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 5 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.

No. 2, 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 backward 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 2 weeks for any additions. The meeting is adjourned.

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

[Additional material submitted for the record follows:]

Washington Office
101 Constitution Ave., N.W.
Suite 375 East
Washington, D.C. 20001
(202) 789 -7850
Fax: (202) 789-7859

Statement for the Record of

The American Society of Civil Engineers

on

"Innovative Financing and Funding: Addressing America's Crumbling Water Infrastructure"

United States Senate

Committee on Environment and Public Works Subcommittee on Fisheries, Water, and Wildlife

July 20, 2017

Introduction

The American Society of Civil Engineers (ASCE)[1] appreciates the opportunity to submit our views on financing and funding mechanisms for our nation's water infrastructure. We also want to thank the U.S. Senate Committee on Environment and Public Works Subcommittee on Fisheries, Water, and Wildlife for holding a hearing on this urgent and timely matter.

A well-maintained public drinking water and wastewater infrastructure is critical for public health, strong businesses, and clean waters and aquifers. However, funding both capital projects and operations and maintenance (O&M) is difficult because the public often does not appreciate the modern convenience of drinking water and wastewater treatment, making it difficult to convey the need for rate increases. Furthermore, capital spending has not kept pace with needs, and if these trends continue, the funding gap will only widen, resulting in leaking pipes, source water pollution, and increases in the cost of O&M.

ASCE's *2017 Infrastructure Report Card*

Infrastructure is the foundation that connects the nation's businesses, communities, and people, serves as the backbone to the U.S. economy, and is vital to the nation's public health and welfare. Every four years, ASCE publishes the *Infrastructure Report Card,* which grades the nation's 16 major infrastructure categories using a simple A to F school report card format. The Report Card examines the current infrastructure needs and conditions, assigning grades and making recommendations to raise them.

In March, ASCE released its *2017 Infrastructure Report Card*[2], giving the nation's overall infrastructure a grade of "D+." As Chairman Boozman mentioned in his opening statement, America's drinking water infrastructure received a grade of "D," while our wastewater infrastructure received a grade of "D+."

Millions of new users are expected to be connected to centralized wastewater treatment centers in the coming years, and because America's drinking water and wastewater infrastructure provide such a critical service, it is crucial that sustained, significant, and strategic investments from all levels of government and the private sector are made.

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[1] ASCE was founded in 1852 and is the country's oldest national civil engineering organization. It represents more than 150,000 civil engineers individually in private practice, government, industry, and academia who are dedicated to the advancement of the science and profession of civil engineering. ASCE is a non-profit educational and professional society organized under Part 1.501(c) (3) of the Internal Revenue Code. www.asce.org.

[2] https://www.infrastructurereportcard.org/

Investment Shortfalls Total Billions of Dollars

Overall, the nation's infrastructure funding gap comes to $2 trillion over 10 years. Despite increased efficiency methods and sustainable practices, there is a growing gap between the capital needed to maintain drinking water and wastewater infrastructure and the actual investments made. By 2025, the disparity between needed and anticipated funding for drinking water and wastewater systems will be $105 billion.

The nation's drinking water systems face staggering public investment needs over the next several decades. According to the American Water Works Association[3], $1 trillion will be needed to maintain and expand drinking water service demands during the next 25 years. Many of the pipes that deliver drinking water in the nation were laid in the early to mid-20th century with a lifespan of 75 – 100 years. Failures in drinking water infrastructure can result in water disruptions, impediments to emergency response, and damage to other types of essential infrastructure. Every day, nearly six billion gallons of treated water is lost due to leaking pipes, with an estimated 240,000 water main breaks occurring each year. In fact, it is estimated that leaky, aging pipes waste 14 to 18% of each day's treated drinking water – enough to support 15 million households.

Nearly 240 million Americans – 76% of the population – rely on the nation's 14,748 treatment plants for wastewater sanitation, and there are over 800,000 miles of public sewers and 500,000 miles of private lateral sewers connecting private property to public sewer lines. Each of these conveyance systems is susceptible to failure, blockages, and overflows.

As cities continue to experience population growth and as rural households switch from septic systems to public sewers, pressure on existing centralized systems will require billions of dollars in investment to meet federal regulatory requirements. Over the next two decades, it is estimated that more than 56 million new users will be connected to centralized wastewater systems, which will require the construction of 532 new systems by 2032 to meet future demand. The U.S. Environmental Protection Agency (EPA)[4] estimates that over the course of the next 20 years, $271 billion will be needed for wastewater infrastructure.

Solutions

Fortunately, Congress has provided some federal funding options that – if robustly appropriated – could help close the funding gap needed for drinking water and wastewater infrastructure. Of course, federal funding is not the only answer; since the mid-1970s, money from local and state governments has represented an increasing percentage – nearly 95% – of public drinking water and wastewater investment. Cities

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[3] American Water Works Association, Buried No Longer: Confronting Americas Water Infrastructure Challenge, February 2012

[4] Environmental Protection Agency, Clean Water Needs Survey, 2012 Report to Congress, December 2016.

and towns across the country report that complying with federal wastewater and stormwater regulations represent some of their costliest capital infrastructure projects.

As some water systems have become privatized, private capital has become another financing mechanism. Regardless of whether a water system is publicly or privately owned or managed, households and businesses still ultimately foot the bill; therefore, care much be taken to ensure that rates are set at levels sufficient to maintain and upgrade infrastructure while not increased so much that low-income residents would face financial hardship.

Of the major infrastructure categories the federal government funds, water services receive less than 5%. However, the Clean Water State Revolving Fund (CWSRF) and the Drinking Water State Revolving Fund (DWSRF) – both authorized by Congress several decades ago – play a vital role in providing much-needed support for investments in state and local drinking and wastewater infrastructure.

The federal government has provided on average $1.4 billion per year over the past five years to all 50 states and the District of Columbia through the CWSRF, which makes funds available to drinking water systems to finance infrastructure improvements. The states, in turn, have provided on average a total of $5.8 billion per year in financial assistance to eligible recipients, primarily as discounted loans.

Likewise, the DWSRF program provides low-interest loans to state and local infrastructure projects. The EPA provides an allotment of funding for each state, and each state provides a 20% match. Since the program's inception, $32.5 billion of low-interest loans have been allocated.

In 2014, Congress authorized the Water Infrastructure Finance and Innovation Act (WIFIA), a new mechanism to primarily fund large water infrastructure projects over $20 million. In December 2016, the WIFIA program received $20 million in appropriations. This program offers the sponsors of large projects a new tool to leverage limited federal resources, stimulate additional investment in our nation's infrastructure, and encourage greater private sector participation in meeting the nation's clean water needs. The EPA estimates that a $20 million annual level of appropriations will result in approximately $1 billion in loans supporting approximately $2 billion in water and wastewater infrastructure investments.

As we work towards closing the infrastructure investment gap, we must utilize new approaches, materials, and technologies to ensure our infrastructure is more resilient and sustainable, ensuring that we can more quickly recover from significant weather and other hazard events while improving the "triple bottom line" with clear economic, social, and environmental benefits. For example, innovative wastewater treatment methods can provide a suite of positive externalities, such as the use of biosolids as a new energy source that could power as many as 3.5 million homes.

ASCE believes that our nation's elected leaders need to act quickly to address the

growing gap in drinking water and wastewater infrastructure investment. We urge Congress to:

1. Renew the federal commitment to water infrastructure by reinvigorating the CWSRF and the DWSRF programs through permanent reauthorization and tripling the amount of annual appropriations.

2. Fully fund the WIFIA program at its authorized level.

3. Eliminate the state cap on private activity bonds for water infrastructure projects to bring an estimated $6 billion to $7 billion annually in new private financing to bear on the problem.

4. Create legislation to allow Public Private Partnerships (PPPs) as one of many methods on financing water infrastructure improvements. ASCE supports the use of PPPs only when the public interest in protected. Any public revenue derived from PPPs must be dedicated exclusively to comparable infrastructure facilities in the state or locality where the project is based.

5. Create legislation to establish a dedicated source of revenue for drinking water and wastewater infrastructure projects that would provide a stable, long-term basis for financing for these critical systems.

6. Preserve tax exempt municipal bond financing, which provides communities with low-cost access to capital for drinking water and wastewater infrastructure upgrades.

7. Support green infrastructure solutions, which provides co-benefits such as water and quality improvement, aesthetic value to communities, and cost competitiveness.

In conclusion, ASCE believes our nation must prioritize the investment needs of our drinking water and wastewater infrastructure to ensure public health, a strong economy, and clean and safe water sources. Strategic, robust, and sustained investments in these water infrastructure systems from a variety of mechanisms must be made quickly if we hope to close the growing funding gap. We thank you for holding this hearing and bringing attention to this critical matter, and we look forward to working with you to find solutions to our nation's drinking water and wastewater infrastructure investment needs.