David Goldbloom-Helzner:
Great. Well, thank you for responding to the question. Let's look at the results and see who's on the webinar. It looks like we have about 182, at least, participants, which is great. Really glad you turned out for this. And as far as the types of hazards that you had to -- that's important for you to mitigate, I'm not surprised about the floods. I knew that would be the top one but I was looking to see what would come in second or third and it looks like drought also because I know there's a lot of drought in different parts of the country, and then also earthquakes as well. And that's important for us to know when we do outreach to you. And in terms of who's the -- who when describing yourself, we sort of spread out the water, wastewater into three categories, but if you kind of link them together, it looks like about similar to what the state government would be as well. So we appreciate that and all the representatives as well as the local government participating, too.

Bottom right, I've described what were some of your suggestions from the November 22nd webinar. And I think -- I've assembled them because I think in the course of the webinar we will cover many of them.

So I'm David Goldbloom-Helzner with EPA's Office of Water, Water Security division, and I'm both the moderator and one of the speakers for today's webinar on Resilience Mitigation Financing. And I want to thank you all for joining us today. The webinar is sponsored by my office and EPA's Water Infrastructure and Resiliency Finance Center. Now I'm going to ask Adrianna Berk of Tetra Tech to go over webinar logistics.

Adrianna Berk:
Hi, everyone. Thanks for joining us today. I'm going to just briefly summarize some of today's features for the webinar. If you have any questions or comments for the presenters, type your question into the Q&A window located on the right-hand side of your screen and click "send." We will answer them toward the end of the webinar after all the speakers have presented.

Audio is being broadcast through your computer speakers, and should you have any technical difficulties with today's event, please let us know in the same Q&A window and we will post an answer back to you in that same window.

Today's webinar is being recorded and an e-mail will be sent to all registrants by the end of the month when the archive is posted on EPA's website. And lastly, today's presentations are available for download in the files window located in the bottom right-hand corner of your screen. To download a presentation, simply select the file and then click "download."

Back to you, David.

David Goldbloom-Helzner:

Thanks. Okay, let's begin. So this is the second EPA webinar in the series. The first was about funding to repair damage after the disaster. This webinar is about funding to protect your utility before the disaster strikes. So here's the agenda for today. First, I will start by giving you a short introduction to EPA's role with resilience and mitigation financing for water and wastewater utilities. Then I will cover some definitions like what is resilience, what is mitigation and financing, and how to connect into the mitigation process to get funding. Then we will hear from four speakers presenting case studies on financing mitigation for utilities in Utah and Florida. The four speakers have great expertise on the topic and they come from state funding agencies as well as current or former utility staff who have been successful in getting funding for mitigation. Then I will come back to briefly tell you about several EPA resiliency and funding tools, specifically for water and wastewater utilities. And lastly, we will have a question and answer session to close out the webinar.

So EPA's role. The mission of my division, the Water Security division, is to support the resilience of water and wastewater utilities to all hazards, including natural disasters, accidents and terrorism. Because Mother Nature can be very destructive to our utilities, we partner closely with applicable state agencies and local officials. We also recognize that to be resilient requires money. So we'll work closely with FEMA and state agencies to support policies that fund mitigation efforts. Finally, we developed numerous tools, trainings and guides to help utilities become more resilient to disasters and specifically to access mitigation funding. So check out our website. It's easy to remember, EPA.gov/waterresilience.

Now, my division is not alone in working on funding for resilience and mitigation, there are some other EPA programs. There's the State Revolving Funds program, both the Clean Water SRF and the Drinking Water SRF. The SRFs are federal-state partnerships that offer low-cost financing to fund projects to ensure safe drinking water and to improve municipal wastewater treatment facilities. And more recently, there's been an emphasis on using the SRFs to support disaster resilience and mitigation funding. Also, there is EPA's Water Infrastructure and Resiliency Finance Center. I'm pleased that Jim Gebhardt, director of the Water Finance Center, is here to give an overview of the center. Jim.

Jim Gebhardt:

David, thank you. And hello everybody, this is Jim Gebhardt. I am the director of U.S. EPA's Water Infrastructure and Resiliency Finance Center. And what we thought we would do is just give you a very brief overview of the role that the Water Finance Center plays here at EPA and across the national landscape.

So to Davis' point about funding programs that originate here at EPA, we basically have been stood up to stand alongside the federal financing programs that we have here at EPA and basically work across the financing landscape as

an agent of best management practices, information sharing, and also looking to broaden out the assistance that EPA can offer state and local governments. So in that capacity, we basically are working in four lanes, which you will see on the slide in front of you. We work as a research agent. We are working in advisory capacities at various levels of government and also with the private sector. We are certainly interested in identifying and promoting innovations on the financing and funding landscape, whether that's public or private resources, and we are clearly all in on the effort to broaden networking, both in the context of EPA's relationships, but also helping to partner folks and connect people across the landscape so we can basically move on best management practices and state of the art methods as they are identified and basically allow them to translate as quickly and expeditiously as possible.

So with that as an introduction, on the next slide I thought I would basically introduce you to some of these select activities that the Water Finance Center is engaged in. And so one of the items that we are looking at basically in the context of best management practices and emerging state-of-the-art practices is looking at alternative infrastructure delivery approaches, known as basically performance-based infrastructure or public-private partnerships either in the P3 or P4 mode. We have been actively partnering with a number of the infrastructure exchanges that have been standing up around the country. The West Coast Infrastructure Exchange comes to mind as an example. We also have environmental finance centers out across the country. So EPA has 10 regions, regional offices, and affiliated with those regional offices are environmental finance centers. They receive funding from the EPA and they also gather in revenue resources from other quarters that assist and abides their efforts promoting environmental finance methods and practices. We're also engaged in what is called the National Drought Resilience Partnership. This is an initiative here at the federal government level. It was initiated pursuant to a Presidential Memorandum that was put out in March of 2016. And the Water Finance Center, its role on behalf of EPA is to basically work to lead an effort on developing and identifying market-based infrastructure innovations that can support drought resilient investments. So if you were to pull up the Presidential Memorandum, which you can find on the White House website, you see there are six goals and the fifth goal is looking at funding methods that involve market-based approaches. And in that regard we are working with both the Departments of Agriculture and Interior. One of our other initiatives, which has been ongoing, is hosting regional finance forums. We have done five to date. We are now in the process of planning for a couple of finance forums on the West Coast in California that will focus on stormwater finance and we expect to have them -- have those finance forums in April 2017, one in the Bay Area, one down in Los Angeles. But also mention that in the context of the National Drought Resilience Partnership, we expect to host one or more regional finance forums that will specifically be focused on drought resilience initiatives from the funding and finance perspective. Another major initiative, which I think all of you on the phone will find interesting and valuable, is a Water Finance

Clearinghouse. And we've been doing a lot of work on this. We are looking to roll it out and introduce it to the marketplace in the summer of 2017. It's basically a portal that is designed to capture and centralize state-of-the-art information and best management practices that should benefit local governments and other stakeholders. So look out for that. We'll have more to say on that down the road.

So we're also -- another initiative that's ongoing is working with stakeholders on financial leadership opportunities for economically challenged communities. And one of the initiatives that's directly related to that is a program that we call WaterCARE, where we've been directing some of our budgeted resources here at the Finance Center to provide technical assistance to 10 designated communities, one in each of our EPA regions, to really work on state of state-of-the-art practices related to predevelopment and how communities position themselves to move forward and get to the funding stage with a well-scoped project in mind. I will just mention down at the bottom of the page you'll see our URL where you can find us, and of course I also want to mention that if you want to contact us and you want to be in touch with myself you can reach me at my e-mail address, which you see on the first page of our portion of the presentation.

So with that, I think it will turn it back over to David.

David Goldbloom-Helzner:
Thanks, Jim. Appreciate that. A lot of exciting things going on.

Now I will put on my speaker hat and cover some definitions as well as how you can connect into the mitigation process to get funding.

I want to define some terms so everyone on this webinar could be on the same page. There are many definitions of resilience. We'll use this definition, which is resilience is the ability of water and wastewater utilities to withstand a disaster, to minimize damage, and rapidly recover from disruptions to service. And mitigation are those utility actions or equipment to reduce or prevent the damage or the service disruptions, thereby building resilience. And in the next slide or two, I will show you some examples of mitigation actions or measures. And then financing are the approaches to fund resilience through implementing mitigation measures.

So why implement -- excuse me, so why mitigate the impacts of natural disasters at your utility? Well, because it's more cost-effective to protect your utility before a disaster than to repair the damage afterwards. FEMA has data on mitigation projects that have shown that in general for every dollar invested in flood mitigation, saves $5 in property and economic damage. And you can see some of the other benefit cost ratios for wildfires and earthquakes. Of course, the specific projects will differ from these general values, but the message is clear,

mitigation can be cost-effective. Also with mitigation, you will be better able to withstand and recover more quickly from a disaster. And finally, with mitigation you can assure your customers that water and wastewater services are reliable, even in a disaster.

For example, in upstate New York, one town decided to mitigate the threat of flooding they had from heavy rains. They invested in elevating their wellheads and their electrical panels, as you can see. During one recent flooding event, they were the only town in the area that continued to operate their drinking water well. And this is really a mitigation success story.

Here are some other examples of what mitigation might look like. The top picture shows an interconnect. So if one utility is damaged, water can be supplied by the other utility. The bottom-right photo is a generator to build resilience when the power is out. And the bottom-left is a reinforced basin which builds resilience to earthquakes. Fortunately, water and wastewater utilities can connect into a national program for hazard mitigation and be eligible for federal funding.

So how to connect. To help you get mitigation funding, start by plugging into the existing partnership between the water sector and hazard mitigation agencies. If you are a water or wastewater utility, your counterpart is the hazard mitigation planner. They're usually located in the local emergency management division or planning agency. Your local mitigation planner looks at all the natural disasters in your county or parish and writes a plan to mitigate the impacts. If you have an idea for a mitigation project at your utility, get it listed in the local mitigation plan so that it's eligible for getting FEMA or state funding. So it's a good idea to reach out to your local mitigation planner.

On the state side, oversight of your utility is at the state primacy agency or the state environmental agency. Their counterparts are the state hazard mitigation officers, or SHMOs. Yes, they actually wear the title of SHMO proudly. The SHMOs assist locals to identify cost-effective options and then rank projects for funding. You'll want your project to be close to the top. Some of the mitigation projects you saw on my earlier photos were funded by FEMA mitigation funds, and briefly at the federal level we at EPA coordinate with FEMA to encourage mitigation policies and funding that benefit the water sector.

So let's look at how EPA's new tool, the Hazard Mitigation Guide, can help you reduce the impacts from natural disasters. This is a homepage for EPA's tool Hazard Mitigation for Natural Disasters: A Starter Guide for Water and Wastewater Utilities. This guide puts together the partnership, the mitigation ideas and the funding opportunities all in one tool. It is targeted to small and medium utilities.

The first selection is Overview which lists the reasons that you should mitigate

the impacts of natural disasters and we covered some of these already in my presentation.

The second selection is entitled Join Local Mitigation Efforts. And this picture is actually of a local mitigation planner's meeting with water utility engineers to discuss the potential impacts of flooding in their community. With this selection, you can find out who your local mitigation planner is and possible topics for a first conversation.

The third selection is Develop Mitigation Projects. So you can get ideas for projects to address flooding, droughts, earthquakes, tornadoes, wildfires and power outage.

The fourth selection is Implement and Fund Project. Because this is the focus of the webinar, let me click on this selection. So on this page, there's all this great information, but of course, it's hard for you to read it. So I've highlighted the main points on the following slides. So here are the highlights. There are several federal funding programs for mitigation. And to be successful does require diligence, a strong project, connections with a local mitigation planner, and a thorough application. And FEMA has four main funding programs that can assist with mitigation. There's a Public Assistance Grant program which is really there for dealing with repairs after a disaster, but has a mitigation aspect to it, too. There's the Hazard Mitigation Grant program, the Pre-Disaster Mitigation program and the Flood Mitigation Assistance program. So the eligibilities differ somewhat between the programs and they usually require a benefit-cost analysis. Typically the federal government provides 75% and the state-local provide a match of 25%.

If you think it sounds daunting, we understand, and that's by the EPA developed Fed FUNDs to help water and wastewater utilities find and access mitigation funds from different federal agencies, not just FEMA. The Hazard Mitigation Guide has a link to Fed FUNDs and towards the end of the webinar I will also demonstrate Fed FUNDs.

Finally, here is the website for the Hazard Mitigation Guide for Natural Disasters. Don't worry to write it down, we'll include the link with the presentation slides.

So that is the end of my presentation. But before we switch to the next speaker, I want to ask another polling question. And while you're reading that and figuring out what your response is, the polling question is, "Which would be the most helpful in pursuing mitigation funds?" And we ask this question because we wanted to find out what EPA or other organizations could do to build resilience of water and wastewater utilities and to maximize the amount of mitigation funds for the sector, maximize those funds that can go to water and wastewater utilities so that you're better represented as compared with other types of utilities like transportation systems.

So just looking at the initial results, what seems to be the most popular is examples of utilities of their successful efforts. And then following that, we are looking at assistance to evaluate cost-benefit of mitigation options. And I think that that's a real key one because you have to show that cost-benefit, a strong one in order for it to pass muster with both the state hazard mitigation officer as well as FEMA hazard mitigation.

So as it turns out, I think we're going to cover many of these in our presentation with some of our speakers and tool demonstrations. So I appreciate your insights to know what we can additionally focus on.

Now, I would like to introduce our first pair of speakers from Utah. We have Brad Bartholomew, state hazard mitigation officer. So Brad is a SHMO in the Utah Division of Emergency Management. Brad, I hope you will forgive me for that. He manages pre- and post-disaster mitigation projects, hazard mitigation plans throughout the state and also is the state lead in disaster recovery. Joining him is John Masek. He was a risk manager for Weber Basin Water District in Utah where he worked on projects to mitigate natural disasters, especially earthquakes. In his current role with VIE Consultants, he has helped many water utilities in Utah and California to develop mitigation plans and to get grants for mitigation projects, especially those involving earthquakes. I will now turn it over, I believe, to Brad to start first. Brad, the floor is yours.

Brad Bartholomew:
Thank you, David. I'd also like to thank the EPA for putting this webinar together and while I'm trying to still figure out how you found my name, I'm happy to be here to share my experience with you. And yes, we proudly wear the SHMO hat. There is a SHMO in every state.

So again, my name is Brad Bartholomew, I'm the mitigation recovery manager for the State of Utah Division of Emergency Management. And I will be talking today about mitigation financing. And hopefully you can identify your projects and identify funding to complete those projects.

So as I said, every state has a State Hazard Mitigation Officer. And what we do is we assess hazards and identify mitigation measures to reduce risks. We do that through developing hazard mitigation plans. Each state has a State Hazard Mitigation Plan. The states are required by FEMA to receive not only mitigation funding, but also recovery funding to have a mitigation plan. Those plans are updated every five years. Utah's currently, we just received funding from FEMA to start our 2019 update.

Along with the state hazard mitigation plans, each -- every local jurisdiction is required to have a mitigation plan as well if they want to receive any FEMA mitigation funding. The SHMOs assist all the locals, whether it be by city,

county, or special districts. We have a variety of all of those in Utah, we have several just county plans, mostly we have what we call association of government plans which is multiple counties get together since most of our state is rather rural, it's easier that way for them, and we also have a number of districts, special district mitigation plans and I will talk a little bit more on why we've looked and gotten into that.

And our main job as well as mitigation planning is overseeing the FEMA mitigation funding and working with locals and people such as all of you on the line on receiving that funding and helping you identify projects and walking you through the process of receiving and applying for and hopefully receiving the funding and the management of the grants.

So David went over some of the grants, I'm going to talk a little bit more about them. So there's the Hazard Mitigation Assistance program. And of course, working for the federal government you have to have an acronym for everything so we call this the HMA. It's a grant program. And under there we have the Pre-Disaster Mitigation Competitive Grant, the Hazard Mitigation Grant program, and the Flood Mitigation Assistance Grant. So the PDM grant, it's the one we will be talking about most even though the PDM and HMGP are a lot alike, there are some differences. The most is HMGP is only available after you received a federally declared disaster and the amount of the funding that is given to the state is then -- the amount of funding given to the state is based on the total cost of the disaster that FEMA comes in and helps with. And each state is allowed to decide on how they run that program and how they prioritize funding. I know some states they use the HMGP funding for only those counties that were impacted by the hazard that was declared, the disaster that was declared. Other states, such as Utah, we open that up to the whole state so anybody in the state can apply for HMGP grants. And then we have FMA grants, the Flood Mitigation Assistance, and those are very flood specific. And in the last couple of years, they've even gotten more flood specific. The last couple of years that funding has pretty much only gone to projects that reduce flooding for those who are -- receive repetitive loss. So they receive a repetitive loss that's an insured structure that has been flooded more than two times in the last, I believe, five or 10 years. So that funding, there's a lot of FMA funding, that's where that funding is going. Utah, we don't have any repetitive loss, which we're not complaining, we're happy to not have that risk, but while other states like Florida, they have thousands of repetitive loss structures. So if your property is a repetitive loss structure, that's something to find out and there's a lot of funding there.

And all of these grants, the PDM and FMA they're available yearly. They usually open up, depending on Congress, any time from the spring to the summer, they give us 90 days to apply for the grant. To give you an example, we applied for our PDM grants in June is when they were due and we just received awarding for some of them this week and we're hoping to receive awarding for the rest of them in the next two or three weeks.

And then I put on the Climate Resilient Mitigation Activities Initiative because under the current administration, they really started pushing projects that -- they prioritize projects that looked at climate change and supported climate change mitigation activities. We did receive a bank stabilization and biofuels project in southern Utah under the Climate Resilient Mitigation Activities. With the current administration, I think kind of like or with the upcoming administration, I think with everything else in federal government, we're not quite sure what to expect. We will wait and see.

So some of the criteria for mitigation projects. I think the number one criteria, your project needs to protect lives and reduce public risk. And I know in our state we get a lot of project applications all the time. People are calling and asking about projects and last year we applied for -- I think we received 15 projects. We were able to apply for 10 of them. And we prioritize them based on these criteria with does it protect lives. If it protects lives, then it goes to the top. And I think with that goes critical infrastructure such as water and wastewater utilities. After an event, we need water and wastewater back online as soon as possible and we consider those critical and life-saving as well. Another thing, and David mentioned the benefit-cost ratio. So FEMA has their own benefit-cost ratio program, it's a software program that you can download on your computer, run it. So while you are making -- while you're looking at projects, one thing you want to do is maybe run -- is maybe run a benefits-cost ratio to see if you meet that one or greater. And then the most important thing is that you have to either have or have participated in a mitigation plan. And we are going to talk about that.

So mitigation plans is where you identify your hazards, your risks and your vulnerabilities and then you lay out how you're going to mitigate those. And during that is when you prioritize your projects.

So, for example, Jordan Valley Water Conservancy District, they were the first special district in Utah to create their own plan. They created their own plan with their own funding. I'm not sure how much they paid for their plan. Maybe John, after we can talk about that. And we just annexed it to the state mitigation plan. So they participated within our plan, within the state plan, and they were able to take that funding or take their mitigation plan and to start funding the projects that they prioritized and found in their mitigation plan to be where they would save the most after an event.

So since that time, since Jordan Valley Water Conservancy District developed a plan, we've had several other special districts develop plans as well and they've been very successful at developing their own plans and then using that to obtain mitigation funding. The numbers are on there, as you see, the dollar figures, those are the federal funding, that's not the funding that the special district put in themselves, but also the special -- that's just the federal funding that they

received because they developed their own mitigation planning efforts. We have seen a large success in -- we've seen a lot of success in special districts to develop their own mitigation plan and receive funding.

Here is some examples of the Jordan Valley Water Conservancy District as well as the Weber Basin Water Conservancy District, all of their local share that was just in-house funding. What they were able to do once they developed a mitigation plan and had their priorities listed of their projects, then they were able to put that into their capital funds improvement plan and so they just funded for that. They knew that these were the buildings they were going to have to retrofit. Let's just start putting funding aside for those and then they were able to use that funding to get federal funding and help offset the costs.

And just to close up here, some tips for financial resiliency mitigation. The number one tip I think is to write your own mitigation plan. You might receive some pushback from your SHMOs. You also might receive some pushback from FEMA. We had to talk FEMA into allowing us to write these local district plans, but I think the success that we are seeing shows that these smaller, localized plans have really -- get special districts to focus on what they need to do and they're able to apply for solid grants during the planning process and identifying projects. You do a lot of work on identifying the projects that need to be done and on how you need to do them and so when you write the mitigation grant itself, you have solid grants that move forward and get funded.

I think I'm out of time. So I will be on to answer any questions afterwards if we are answering questions.

David Goldbloom-Helzner:
John -- I mean, Brad. Can you just talk about that BCA, the benefit-cost analysis? Because that's pretty important at your level.

Brad Bartholomew:
The benefit-cost analysis, if you are looking at doing just one project, I would find somebody who has done a BCA and hire them to run the benefit-cost analysis. It is pretty technical, especially for seismic projects. We haven't done a lot of water districts for flooding projects so I'm not sure how technical those are, but if you are just doing one project I would hire someone that's been successful in receiving the PDM grant or HMGP grant using the BCA tool and have them do it. But if you're going to write your own mitigation plan and plan on applying for four, five, six separate projects, I would train someone in-house to learn how to do the benefit-cost analysis because it is pretty tricky and there's a lot of things that you need to learn that go into it to help to make sure that it's solid when it gets reviewed by FEMA.

David Goldbloom-Helzner:
Okay, thanks, Brad. And just to add to that, I'm actually working with a

community in Iowa now that deals with flooding and the state has a mitigation officer staffed, is helping to collect the data and will assist the utilities to do the cost-benefit analysis. So in some case they may not really need a consultant to help that.

So I would like to invite John Masek, if you want to begin your presentation as well.

John Masek:
All right. Thanks, Brad. So one of the things, it's not listed on the first steps here in mitigation financing is actually to have a good scope and Brad is very proactive and hopefully the state hazard mitigation officer is proactive with your organization as well.

So as the other speakers have mentioned, I'm going to go over the whole process of preparing the Hazard Mitigation Grant to one or more types of agencies. I'm going to touch on the benefit-cost analysis. That's really key; it needs to be solid. The people that review these grants at FEMA and other federal agencies carefully look at that analysis. And then we are going to talk about project prioritization and funding availability. And we are going to do all of that in the context of projects that were actually financed and successful.

So Brad mentioned developing your own utilities hazard mitigation plan. Most utilities in cities do participate in the regional plan. A regional plan can be at the county level, at the state level, and you should still do that. That's important. It's important to interact with other agencies. It's important to have their support. However, as I've seen in Utah and other states as well, California and Washington and others, it's very important to have a good understanding of how any potential mitigation projects fit into your capital improvement plan. In order for a utility or city or any other agency, a school district, to be able to fund projects or meet the match that they have to have, it has to be an important project from the standpoint of just the capital improvement plan, that plan you put in place every year that has a 10 or whatever duration it is to fund your projects. Successful mitigation projects will be in line with that capital improvement plan. The next step is to connect with the local hazard mitigation planner. That would be Brad or whoever the state hazard mitigation officer is in your state. A lot of these federal funds flow through the state to the agency and therefore, your organization. If you are a local government entity, you would be the sub-grantee.

Now while I was at Weber Basin Water as the risk manager, we applied for numerous grants. It was the first time I'm aware of that a large utility sought, in Utah anyway, to have part of their plan funded by FEMA. The plan generation can be a big effort. In the case of Weber Basin Water, they're the largest water district in Utah, spanning five counties, 600,000 people, with literally over 100 facilities that had to be looked at. So coordination of all those things was

important. The list here shows other hazard mitigation plans that have been approved by FEMA and funded in part by FEMA. So you see, you don't really have to just fund the plans yourself. You can develop a grant to ask for the funds to be partially paid for.

David mentioned an important thing, and I found it to be quite important in this regard. I'm showing you a canal. It's not important to look at all the dots there, but you can see the canal runs through a portion of the county there and starts at a pump station. The orange indicates high risk from an earthquake standpoint, red indicates very high risk. And this particular project was funded by more than one federal agency. FEMA, through the state, funded the hazard mitigation plan to identify the project in the first place. FEMA funded a portion of the project related to retrofitting critical equipment at the pump station to make sure it was properly anchored, that the pump station itself was sound. And then a separate grant was submitted to the Bureau of Reclamation. The grant period is open right now called the Water Smart Program Through Reclamation, and Reclamation actually funded the expensive part of the grant to line the canal. I say that because a lot of the participants on this call were interested in flood and hazard mitigation. The lining of the canal mitigated both flooding so that the canal wouldn't fail, and secondly, was very effective in mitigating a drought, precious resources from water, instead of just flowing into the ground were saved there and continued on to be useful. So that was an example of coordinating with more than one federal agency to fund one project.

So the BCA analysis is a mathematical analysis that looks at the cost of a project which needs to be well documented. What FEMA likes to see on their BCA analyses and, for that matter, Reclamation and others as well, is sufficient backup to show that the costs really are what you say they are. So there needs to be some level of preliminary engineering and analysis to determine what the cost would be, what the maintenance cost would be. It's not something you can just say that we think this is what the cost is. You have to be able to document it thoroughly. One thing about water and wastewater districts is usually they can have a rather high BCA compared to some of the numbers you saw there for earthquake. In the case of earthquake or flood or drought or any of those things we were just talking about, the benefit can be quite high because many people are affected by one mitigation project.

This is an example here. As I mentioned, Weber Basin Water looks at all its facilities, four water treatment plants, dozens of wells, hundreds of miles of pipeline and so on, and identified 17 projects out of all of that, that really would have the best effect on mitigating hazards for them. This is a backwash tank. Those of you in the water/wastewater industry will know what that is. It has to function, otherwise the water treatment plant itself goes down. So in this particular case, if the backwash tank were retrofitted, its reliability following an earthquake in this particular case was greatly increased to a large number of customers affected by this. Using FEMA -- there are different modules that

FEMA has in their hazard mitigation software, one of them is called a Damage Frequency Assessment module, and you can see the benefit-cost there, BCR of 8. That's a very high benefit for the cost. And you can find it by carefully selecting the components of your facilities that are the highest risk and have the highest benefit, your chance of getting funding is drastically improved.

So with regard to prioritizing the projects, sometimes you'll find projects like I just showed you that have a relatively modest cost and have an enormous impact on your facility. Sometimes the costs can be higher. We looked at some of those larger projects that were funded, but the BCA can still be very high and useful in terms of mitigating the overall system risk.

Now in the case of water and wastewater utilities, there is an urgency in recovery and therefore, mitigation before a disaster is really something that should be strived for because, for example, in the canal I showed, having that canal fail or the pump station fail and then trying to recover from three assets in that case, drought, earthquake, and flood would not be a good approach. So pre-disaster mitigation was the program that was used there partly by FEMA and then partly by Reclamation.

Another type of project that I want to show and this correlates back to the hazard mitigation plan. This was again at Weber Basin Water. This is one of their water treatment plants. Usually in water treatment plants building an entire new water treatment plant is not what is happening. More what's happening is existing water treatment plants are modernized. The left half of that slide is all new filtration buildings and chemical process buildings. And the right hand it's mostly existing basins that were retrofitted with some new basins. At that particular plant the projects that have been funded already are retrofits seismic of piping and equipment. And the next project that will be submitted not too far from now is to actually retrofit the basins themselves.

This is just an excerpt of the 17 slides that the district prioritized and again that had to be related back to their Capital Improvement Plan and you can see that all of these have been funded after the Mitigation Plan was submitted and approved.

Another thing and I think this was real important. When you develop a hazard mitigation plan and you get it approved by FEMA you are going through a process whereby FEMA is aware of your projects and has input into the priority of those projects prior to the grant being submitted so you are getting some level of interagency buy-in to the project before you even submit a grant to actually conduct it.

Another one that was talked about previously, it's not a water/wastewater utility, but it's a school. In this particular case life/safety protection was the primary objective here. The school could have some damage, but it could not collapse or prohibit people from exiting following an earthquake. This school district was

the only school district to actually pursue getting -- at the time, others are doing it now, but getting the hazard mitigation plan approved in advance and subsequently they've now successfully completed the plan and retrofitted four of their high risk schools which of the schools they had only four were requiring actually retrofit.

And, David, back to you.

David Goldbloom-Helzner:
Great, thank you, Brad and John, for those excellent presentations. Just a reminder to everyone that we will hold questions until the end of the presentations but please do submit your questions now, so we will have it available towards the end of the webinar.

So now I would like to introduce our next pair of speakers who are from Florida, sunny Florida. The Director of Water Reclamation at the Emerald Coast Utility Authority or ECUA in Florida. He oversaw the actual replacement and movement of the Main Street Wastewater Treatment Plant to a different location to address repeated floodings. Then he will be joined by David Carr, a Senior Environmental Engineer with Baskerville-Donovan Consultants. David served as the Project Manager for the Wastewater Treatment Replacement Project where he was integral in the conceptualization, planning, development, siting and funding, and permitting of the project.

So, Don, I believe you are the first one to start.

Don Palmer:
Thank you, David. I'm going to start by saying I am not a SHMO. But I am a Water Reclamation Director which means I have responsibility for our three wastewater treatment plants. And this is about moving one of our wastewater treatment plants that used to be called the Main Street Wastewater Treatment Plant. This was done as an alternate project even though it says replacement project there, we did replace one plant and build a new one, so that is the title. The picture you see there is of the new plant that was paid for with a lot of FEMA money. And I'm going to give you a little background about our utility.

So to start with we are in Pensacola, Escambia County, Florida. Basically very close to Alabama state line. You get off the interstate exit 12 and we are about as far west in Florida as you can go and still be in Florida. We have a small, medium-size utility. We have about 65,000 customer connections, three wastewater treatment plans. This is the largest plant, 22.5 mgd. We have two other plants. We have about 380 lift stations and about 1300 miles of sewer pipe.

Back in early 2000, ECUA formed a committee due to the public input to study whether to upgrade in place or replace the Main Street Wastewater Treatment

Plant with a new facility. It was the Strategic Main Street Replacement Team, they call themselves, the SMART Committee. And they came up, funded a study, the county got involved. We are a special authority. We were set up by the state legislature. We took over the infrastructure of the city and the county and the idea was to implement cost savings due to one entity operating them both and to close down a bunch of facilities and we did that. But we are a separate authority, but the county was involved, joint kind of support from the county. There was a lot of people wanting to move the plant. But the study came forward and said well we really want to move the plant, not upgrade it where it was. And there are some reasons to that but out of the study the problem was, like most governmental studies, we didn't have any funding. The board was not willing to say we are going to increase rates enough to move a wastewater treatment plant. So they set forth kind of a funding plan. They said we are going to come up with three sources of funding. We're going to try to get a third of it federal, a third of it state, and a third of it local. And that's kind of where we started off on this project.

Why did they want to replace it? We had a history of problems at this plant. There were some things that could be solved by upgrading the plant, but there were some things that could not be solved by upgrading the plant. It made more sense to move the plant. One of those is the elimination of a discharge into a surface water, Pensacola Bay. We had a lot of odor problems. We had a dryer, sludge dryer. We had a -- we replaced it – I mean we had a sludge incinerator, replaced it with the dryer, they both had their share of odor issues. We had primary sludge. We spent a lot of money trying to fix those and it helped but it certainly did not fix them. By moving the plant we had some opportunities for reclaimed water, but you see in the upper right there, one of the main things it did was move it out of the floodplain. If we can move the plant, we hadn't been flooded, the floodplain in this case is a hurricane floodplain and not necessarily a flooding from rain as much as it is from storm surge. We had had the plant inoperable several times due to hurricanes. We met Class one reliability by having two separate electrical feeds from two separate substations, but on multiple locations due to hurricanes we were without power. We also wanted to upgrade the treatment technology as was mentioned in the last presentation. So those were the main reasons to replace it and that's why there was a move to replace it.

In 2004, about a year and a half after the plant was finished, we had a major hurricane hit us just to the west of here. It was a strong, very strong CAT 3 when it made landfall. And this drawing or this map here is from FEMA showing the high water mark at the plant. I don't know whether you can see this or not, but you can see the high water line. Did I get it? I don't think I got it there. There's a high water line -- there it is. Showing the extent of the flooding from the hurricane and then you see the plant. Do I move that? Yeah. You can see the outline of our plant here. That was totally inundated and the other thing you can see very clearly in this picture is our location to Pensacola Bay. The

storm surge came up, inundated the plant, hit at 2:00 a.m. Tuesday morning. We were without power for about three and a half days. There was flooding in the streets. One of the things you can see in this picture is this -- I'm struggling, but there is a car on the street. This is my public service announcement, stay out of the stormwater because that's a treatment plant that is not working. There is no pumping capacity at the plant. That car that you see on the Main Street is driving through basically wastewater and that's one of the reasons people tell you to stay off the street.

So some of the details I just went over, but we had a 12-foot storm surge which inundated a lot of the plant electrical components. We were able to dry most of those back out and get them running again, but there's a lot of concern over latent damage. How much damage did the saltwater do? How long were the components going to keep working? What was it going to take to replace all the electrical? So we had a very major hurricane hit us and the big result of the hurricane was that we had a plan to move the plant. We had some public support, but it shifted from kind of a thing we need to do to something we have to do. It solidified the public to wanting to move the plant, solidified it from the standpoint of they got behind the County Commissioners, the City Council, the local legislative government, the state government, the federal government. FEMA went around after the hurricane, held public meetings and said, “What can we do to help you recover from this event?” And the public was very good about saying help us move the Main Street Wastewater Treatment Plant. And that helped us work with the -- our SHMO, Miles Anderson was instrumental in making this happen. And so that was the main thing that happened with hurricane Ivan.

So with that I'm going to turn it over to David Carr.

David Carr:
Good afternoon. As Don mentioned, prior to hurricane Ivan we had a feasibility study that basically indicated we need to get the plant out of downtown Pensacola and away from the danger of the hurricane surges and high winds. This is the plan that resulted from that feasibility study. Like Don said it was completed in late 2002 and from 2002 through hurricane Ivan, we were pursuing funding. And with hurricane Ivan that funding became much more possible. So through the feasibility study we developed this rough plan.

While we were pursuing funding we also started on a facilities plan and that facilities plan resulted in the details of this. In the -- excuse me, a second. In the lower corner of the map you can see that's where the existing treatment plant is. At the very top end of the map you can see where our new wastewater treatment plant is, the Central Water Reclamation Facility. That is approximately 18 miles inland. You can probably see some major features of this system included a three regional pumping stations, and Force Mains ranging from 18-inch up to 54-inch. And what this gained us is hurricane resistance through

the elevated construction up in the north end of the county. The regional lift stations are also made hurricane resistant through elevation of the electrical panels including redundancy in the pumps including emergency power generation. So through those means we are able to essentially construct a system that is not hurricane proof, but much more hurricane resistant than the previous Main Street Wastewater Treatment Plant. Basically a CAT 1 storm would start flooding problems at the Main Street plant. We experienced a CAT 3 on September 16 of 2004 which put the plant out of commission for several days at the time.

The main feature of this replacement plan is the new treatment plant. We mentioned it's about 18 miles inland. It's designed as 22.5 mgd. AWT plant, 5/5/3/1. It's also capable of drying 20 tons per day. We achieved 100% reuse of effluent through co-locating this plant in the midst of several industries including Gulf Power and International Paper to local industries that – power plant use a lot of water for cooling and the water plant -- excuse me, the paper plant uses a lot of water for its cooling purposes and process purposes. So we are able to get the benefit of 100% reuse there.

Some other features of the plant include a reject storage capability that we did not have in our downtown location, and a 60 million-gallon wet weather storage capacity that we also did not have in our downtown location. So through locating this facility off-site we were able to significantly improve the treatment capacity, capabilities, and resiliency of the facility.

This being a webinar on resiliency I will point out that this did not really start out as a resiliency project or a mitigation project. It started out as a repair project. But the ultimate result is to be a mitigation project and we were originally intending to repair just what we had downtown even though we'd like to move it but we could not find the money through our efforts up to 2004 and when hurricane Ivan hit it sort of changed the picture, as Don mentioned.

To give you an idea of the cost of the project, these are the total costs for the construction of the replacement project. We had to demolish the new plant, excuse me, the existing plant after we finished up all the replacement. That was $4.5 million. I won't go through these line by line, but basically we had $316 million worth of construction we had to undertake in order to eliminate the downtown wastewater treatment plant.

In order to do that we have been looking prior to hurricane Ivan at any funding – [audio gap] got to get this done, so we started getting a lot more open doors for us. Miles Anderson came in and was able to guide us through much of the FEMA process. Basically we started out looking at just repair, repair aspect to say how can FEMA help us get this thing back up and running and what can we do from there to keep it from happening again. We went from the repair of the direct facility to looking at an improve project to which would include some

unfunded mitigation efforts. We were looking through the Public Assistance Program, the 406 Public Assistance Program which is primarily focused on repairing the damage. So at this point, we were not also looking at the 404 Mitigation Program, but just looking at 406. So as we were guided through that process it came up that the repair also includes a “codes and standards” clause which basically says whatever you fix you have to fix it up to current standards. But in Florida the Florida Department of Environmental Protection is the authority having jurisdiction that defines the codes and standards. So basically we talked to them and said what do we need to do to meet your requirements. And they came back with a fairly extensive list that had a total cost of about $151 million. So after we recovered from that heart attack, because that's how much they were telling us we had to spend, we worked again through Miles with FEMA to determine was that cost an eligible cost. So we could go with a 406 Public Assistance application for that $151 million project.

The next step in that effort was to say we don't want to just build it here if we can build it better and make it more resistant, it's always going to be vulnerable to storm surge and a large failure event. So we applied for an alternate project to redirect the repair funds to the alternate site which is the alternate site as identified in the original feasibility study and then in the facilities plan.

We tried one step further which is the permanent relocation, essentially we asked FEMA for the full cost of the replacement of the treatment plant which was about $360 million. However, that permanent relocation requires a cost benefit analysis which we were unable to satisfactorily meet, basically we could prove out that we needed to repair and redirect for an alternate location, but the hurricane return frequency was not expected to be frequent enough to warrant the permanent relocation. And [indiscernible] one that's proved to be true since we haven’t suffered a direct hit since then.

Don Palmer:
In 2005 we actually had another hurricane that a year later, in the middle of trying to get all this funding, the 2005 hurricane season hit which had 10 or 12 hurricanes crisscross Florida and sent FEMA crazy. And did knock us off line again, but we didn't flood.

David Carr:
So with the project identified as the relocation of the Main Street Treatment Plant up to Central County which hence the name Central Water Reclamation Facility we had that project identified at a $151 million cost based on the providing reasonable assurance per FDEP, that's their term for “this is what we want you to do in order to keep having your discharge permit” as the authority having jurisdiction. So that reasonable assurance requirement brought our total number up to $151 million. As I said, permanent replacement was denied based on the inadequate cost/benefit analysis. [Indiscernible] request was approved allowing us to build up in the north -- north of -- in Pensacola.

The funding matrix and I call it that intentionally in that it was a matrix of 10 or 12 different funding sources is as illustrated here. And I will briefly go through these. The trick on this was that in order to meet the criteria of each funding agency and stay within their limit, we had to be aware of all of their rules and then put a matrix together of how one funding source could serve as the set-aside or the match for another funding source. So it got very complicated very quickly. We had actually one full-time person dedicated to pretty well doing nothing but managing that matrix.

I'll go a quick rundown of our funding sources. We got a $7 million grant from the county with which we were located, Escambia County. It was basically to encourage us to get out of downtown. The city of Pensacola whose cities limits the old plant is within also encouraged us to get out of downtown. They gave us $19.5 million spread over a 20 year period. From the state of Florida CBIRS grant we got multiple grants starting in 2004 through 2006 totaling $28.3. The one thing to note on there, the 2004 grant was prior to the Ivan event so we had FEMA getting some CBIRS grants in to help us get this thing going and work on the feasibility study and facilities planning. Beyond the CBIRS we had a Water Management District grant, $4.9 million. We used some SRF funds totaling $24 million over three years I believe. State and tribal grant, excuse me -- State and Tribal Assistance Grant of $0.8 million. We got a private bank loan of $129 million and finally the FEMA 406 funds at $134.4 million. That was actually several different applications that were approved along with the Main Street Treatment Plant being disrupted, it's outfall that goes several thousand feet out into Pensacola Bay was also disrupted, so we actually got two different FEMA grants, one at $120 million and another $13.4 million for the actual cash outlays. I mentioned earlier that almost each of these had a match required that we used one fund to match the other. For instance the 406 funds that had a 10% match required, the state picked up 5% and we had 5% from local sources to make those.

That is my last slide on this. I just want to close with a couple of remarks on how this all came together. Again the key in this, obviously the key in this project was the FEMA funds, obtaining those FEMA funds made a dream a reality. The means to obtain those was with Miles' help we figured out the rules, figured out how they could work to help us and what requirements we need to meet all the requirements for the funds. And we made that our job to learn those and understand those and we didn't try to buck the system or ask for anything that was not within the rules which made it a fairly easy project to approve. We just stayed within the rules, played within the lines, and got everybody to work together and made the project happen.

David Goldbloom-Helzner:
That's great. Thank you, thank you, Don. Thank you, David. That's a great presentation. And I can personally say first of all, I'm very proud as an EPA

person to have the State Revolving Funds be part of the mix of funding to make this happen. And I visited the facility before and it's amazing state of the art, wonderfully operated facility up on top of the hill so it's not going to get flooded there, but I appreciate Don and David and all of your -- I think that is diligence that you have shown to make something happen. So appreciate that.

And I see there were quite a few questions about your project as well and hopefully we will get a chance to ask you about those, too.

So just sort of wrapping up on my end, I mentioned that our Security Division develops tools and guides to help utilities build resilience to all hazards. So as the presentation comes up, I've got two columns here. There are tools -- the tools on the right column, these are tools from EPA on resilience mitigation financing. The tools on the right side are to help utilities come up with mitigation ideas, case studies, and best practices so you can see a number of different types of disasters that it addresses.

And on the left column are tools that help utilities connect in with funding. They include the Hazard Mitigation Guide which I briefly demonstrated earlier. And also the second is Fed FUNDs which stands for Federal Funding for Utilities - Water/Wastewater - in National Disasters. And to see what it does I will demonstrate it for you now. So Fed FUNDs can steer utilities to applicable funding opportunities. It can let you see successful funding applications, can give you a list of funding mentors and can help you access forms to document damages and costs. And you can access Fed FUNDs simply at EPA.gov/fedfunds. And there you can click on any one of these buttons, but let's explore a few buttons in more depth.

So if you click on “Which Funding is Right for You” button, you will get four questions to answer. For example, are you a public utility, or a private nonprofit, or private for-profit. And depending which selection you have, you will likely get different funding opportunities. Question two asks if you are interested in disaster funding. Question three is about Mitigation Funding and question four asks if you are a rural utility serving less than 100,000 people.

After submitting, you get this funding summary report. Because I've pretended at this point to be a public utility that was interested in mitigation, it came up with the four FEMA Mitigation Programs and EPA State Revolving Funds. And you can take this report to your supervisor as a possible funding sources for your Mitigation Projects.

With another button called “Federal Disaster Funding Programs” you can get information about different federal funding to recover from a disaster or to mitigate impacts from future disasters. So, for example, the tabs across the top are: FEMA Public Assistance, FEMA Mitigation, U.S. Department of Agriculture Emergency Water Grants, EPA State Revolving Funds, HUD Community Block Grants, and SBA Loans. Each tab is a detailed information about the specific programs, real-world examples and tips from utilities that have actually been through the funding process.

And the final button that I will show you is under the “Utility Examples” button. We have several -- there we have several successful utility applications that you can actually look through. And these include 16 mitigation projects paid for by FEMA.

In another tab on this same slide we have the contact information for funding mentors which include utility mentors as well.

And that completes the presentations parts of the webinar. And I think we should go on to the questions so that we will have about 15 minutes for questions. We will try to answer as many questions as possible. Meanwhile we have included the contact information for each one of our presenters.

So at some point during our question and answer session, we are going to put up two last poll questions for you to answer. And so you will see what those are if you stay with us.

So there -- I want to take a few questions that I saw come on in and maybe I can answer a few here and then we will go to our speakers.

So one of the questions is, “Where can I find contact information for my local mitigation planner?” And for that it's really important to get in touch with your State Hazard Mitigation Officer or your SHMO, and you can do that in a number of ways. I'll give you three possibilities. You can go on Google, type in FEMA, and then SHMO and you will get the site for SHMO. Or it’s at FEMA.gov and then a dash between every one of these words State-Hazard-Mitigation-Officer. And then you will get to it that way or as we would like for you to do is to go on to the Hazard Mitigation Guide for EPA and you will find the link there and it will tell you what to talk about with the local mitigation officer as well.

Another question I think was coming in about the cost to the community. A person wanted to look at that slide again. I think you probably wanted to know the cost for the potable water to the community and that was $103 per person per day. And the other one for wastewater was $45 per person per day.

Another person asked about repetitive risk in relation to earthquakes. And I think if any of the panelists want to talk about it but it was really that repetitive risk funding and I don't think it's really regarding earthquakes per se. It's more like addressing flooding, things that happen more frequently and have equal damage to the water or wastewater utility.

And now I will ask a few of our speakers a couple questions. There was a lot of interest and I will direct this to you, Brad. There was a number of questions about special districts, the Special Local Mitigation Districts, I think you may have mentioned for Jordan Valley became one. And so it's about how do you create one, how do you -- how did you overcome FEMA reservations about it because I think some people feel like it could be a useful thing if a utility was actually its own special district. Brad,

can you handle that one?

Brad Bartholomew:
Yeah. So I'll see if I can answer that. I wouldn't say that they created -- they were already -- we considered them special districts because they are not like a government entity, they do have to -- to be eligible they do have to have like their own taxing authority such as water districts. And then so I would talk to -- find out who your SHMO is and have a conversation with them and how they feel about you applying for your own -- or writing your own Mitigation Plan. Where FEMA has reservations it's because they don't want to fund -- all the special districts are within communities and so FEMA looks at it like well Jordan, the Jordan Valley Water Conservancy District is in Salt Lake County, why don't they just participate in Salt Lake County's plan? They should just go to those meetings. Salt Lake County is getting funding to write a plan. Go to those meetings, participate in that plan. Why should we fund two plans that cover basically the same area? Our -- Jordan Valley funded their own plan so FEMA doesn't care if you guys fund your own Mitigation Plan. It's when you are asking FEMA for funding for Mitigation Plans that then they are like well, do we -- do we really need to fund this school district? We had a lot of conversations with them about some of the other Weber Basin, one thing with Weber Basin Water Conservancy District is they are up and down throughout several communities and counties. They supply water to several counties, lots of municipalities, so we were able to kind of use that and really just need to get more specialized and focused on their infrastructure to identify projects. FEMA came back and said well, you know, they can do that in the Weber County Mitigation Plan and then we have to come back and say well, they are not receiving any funding to really get that specific so they are not going to, but again, I think if you can come up with funding to start your own Mitigation Plan, I think it's well worth it if you are going to apply for those grants. I hope that answers the question.

David Goldbloom-Helzner:
Yeah, that's great. Appreciate -- I think you covered that.

So I want to direct a question to Don and to David. There were -- I'm going to give you a number of different questions and you can figure out which ones -- how the best way to answer them. It was all about the study that you outlined and how you figured out where you were going to go in terms of direction for mitigating the flooding issue with the wastewater system. So people asked, did FEMA fund that study? Who provided the money for that study? Any detailed more breakdown of the costs that are available? And so those are the ones that were all about that particular study. So, Don, David can you get that?

David Carr:
This is David. In regards to the original feasibility study that was a fairly small $180,000 study. The cost of that was split three ways between three local entities being the city, county and ECUA. As I mentioned in my earlier

presentation, all three entities had a vested interest in getting that treatment plant either more storm resistant or relocated. So the three entities funded that original study and came up with the conclusion that we need to move the plant 18 miles inland. The facilities plan was largely funded through the CBIRS grants, that's the study that followed the feasibility study. We also did have some funding as I indicated in my slide from the city and county to a lesser degree at that point with the larger degree of funding for that study came from the CBIRS grants. FEMA did not really get into the picture until after hurricane Ivan and at that point we had essentially already funded the two studies that were required. FEMA's funds primarily went towards construction. Due to the rules of how the FEMA money was spent we essentially shielded it from use for anything but construction. As far as giving a more detailed breakout, I'd be happy to provide more details on that.

Don Palmer:
Anything in particular you're looking for?

David Goldbloom-Helzner:
I would say the person who asked the question maybe they could put into the chat room that they were particularly interested in it and we could find out more details.

Also just a follow-up, there was a question about did you ever in doing the costing, did you ever look at increasing customer costs as part of the overall package.

David Carr:
Since we did have some local or some ECUA funding through the loans, we did look at the customer impact.

Don Palmer:
We actually did a special assessment on everybody's bill for moving the wastewater treatment plant so there was an impact to all the customers. I think for residential customers, for instance, it was $5 a month and that was over -- roughly for a 20 year period. For commercial customers it varied depending on the size.

David Goldbloom-Helzner:
Okay. I appreciate that response. So for John, John are you there? Okay, John, I have a question for you. Are there certain things, certain tips that you see in doing several of these for being able to successfully get mitigation funds? What would you say would be a key best practice or a key tip for getting mitigation funds?

All right, John may not be on the line anymore. Does anybody of the panelists want to look at that question, a tip that they would say… [overlapping speakers]

Oh, okay. Is that John?

John Masek:
Sorry about that. Yeah, so as Brad mentioned, really if you look at the success of the mitigation projects that have actually been funded, there's been an extremely course correlation between districts or cities that pursued their own plan rather than just being part of a general plan. I think you want to be part of the general plan to show cooperation with other entities, but that's going to be a real general level of participation. It is not going to clearly define what your project is. One of the keys to winning these grants is to thoroughly document your benefit cost analysis and just the process of going through developing your own plan accomplishes that. So there is a lot of -- I would just strongly recommend pursuing your own plan and not just doing it out of your own resources, but also pursuing a FEMA grant to partially fund the planning process. Brad can speak about it as well, but the funds to pay for a hazard mitigation plan are called Planning Grants and then there are Project Grants that pay for the projects themselves. And FEMA has been very good about funding hazard mitigation plan. And that's been a real key to actually showing that your project has been thoroughly analyzed and it's the right project to pursue that particular grant cycle.

David Goldbloom-Helzner:
Okay, great. Thank you. John, could you just quickly comment about like if you are addressing several hazards because there was a question about if you deal with earthquakes and deal with flooding and several things, is that sort of an advantage too to getting funding or does that make a difference?

John Masek:
So addressing more than one hazard is really important in terms of demonstrating the importance of the project. When you are doing a benefit cost analysis using the FEMA BCA software, you are really usually directed toward picking one hazard that you are mitigating. On the other hand, if you are pursuing funding from multiple agencies, for example, the canal project that I showed which mitigated earthquake, that was funded by a FEMA grant to retrofit well equipment and well houses, but the part of the grant related to lining the canal which mitigated flooding and mitigated drought was funded through the Bureau of Reclamation. And they have their own, as other agencies do, they have their own benefit cost analysis methodologies. And the key there again is to thoroughly document your benefit cost analysis and clearly show why this particular project is the one that uses federal funds in the most effective manner.

David Goldbloom-Helzner:
Okay, great. Thank you. Thank you, John.

There's one more question that I would like to answer, I'll answer it myself

because it has to do with EPA State Revolving Funds. Specifically about the Clean Water State Revolving Funds and whether it could partially fund some mitigation measures including balancing or combining it with FEMA Hazard Mitigation Funds. And we've clearly seen that to be the case. There's been a lot of discussions between EPA and FEMA to do this and the sort of first time we were really doing it in a major way was with Super Storm Sandy and so it clearly happened there and also you can see the Florida example was another one. And then I mentioned, I was just recently in Iowa and Iowa just got the permission to be able to use the State Revolving Funds as part of that 25% match that the state and local governments have to do.

I'd also mentioned that we are also exploring the SRFs as a possibility to be a bridge loan when there is a disaster that occurs. And it might take many, many months or maybe years to get FEMA money, so there's a possibility of SRFs being a bridge loan. And if you are interested in that idea, I'd invite you to contact Jim Gebhardt at the Water Infrastructure and Resilience Finance Center and he is working that issue.

So you see the poll up there, so I encourage you to just complete the poll but I wanted to -- because I think that's all the time for questions that we have. So I want to thank our speakers for sharing their experience on resilience mitigation financing. I do think it was very beneficial. And thanks everyone for joining us on the webinar. We will leave the poll question open a little longer and remember to download your presentations in that window over there. So thank you all very much. Have a great day.