U.S. Environmental Protection Agency
Environmental Financial Advisory Board

August 22-23, 2017

Held at

Kansas City Marriott
10800 Metcalf Ave – Overland Park, KS

EPA-800-S-17-001

The minutes that follow reflect a summary of remarks and conversation during the course of the meeting. The Board is not responsible for any potential inaccuracies that may appear in the minutes. Moreover, the Board advises that additional information sources be consulted in cases where any concern may exist about statistics or any other information contained within the minutes.

Meeting Purpose

The EPA's Environmental Financial Advisory Board ("EFAB") will hold a public meeting on August 22-23, 2017. EFAB is an Environmental Protection Agency ("EPA" or "the Agency") advisory committee chartered under the Federal Advisory Committee Act to provide advice and recommendations to EPA on creative approaches to funding environmental programs, projects, and activities. The purpose of this meeting is to hear from informed speakers on environmental finance issues, proposed legislation, and EPA priorities.

Attendees

EFAB Members

- Aurel Arndt, Lehigh County Authority
- Brent Anderson, RESIGHT
- Lori Beary, Iowa Finance Authority
- Janice Beecher, Michigan State University
- William Cobb, Freeport-McMoRan Copper & Gold, Inc.
- Hope Cupit, Southeast RCAP
- Lisa Daniel, Public Financial Management
- Yvette Downs, Strategic Management Systems, LLC
- Jeff Hughes, Environmental Finance Center University of North Carolina
- David Kane, Portland Water District
- Suzanne Kim, New Forests
- Thomas Liu, Merrill Lynch, Pierce, Fenner, and Smith, Inc. (Interim EFAB Chairman)
- James McGoff, Indiana Finance Authority
- G. Tracy Mehan III, American Water Works Association
- Chris Meister, Illinois Finance Authority
- Joanne Throwe, Maryland Department of Natural Resources
- Richard Weiss, Morgan Stanley
- Pamela Lemoine, Black & Veatch Management Consulting, LLC
- Marie Roberts De La Parra, BMB Construction Properties
- Jeff Walker, Texas Water Development Board
- Jennifer Wasinger, Freese and Nichols, Inc.
- Theodore Chapman, S&P Global Ratings (Expert Consultant)
- Rudolph Chow, City of Baltimore (Expert Consultant)
- Craig Holland, The Nature Conservancy (Expert Consultant)
- Daniel Kaplan, King County Washington (Expert Consultant)
- Eric Rothstein, Galardi Rothstein Group (Expert Consultant)
- Linda Sullivan, American Water (Expert Consultant)
- Angie Virnoche, FCS Group (Expert Consultant)

EFAB Members and Expert Consultants unable to attend the meeting:

- Edwin Crooks, Transurban
- Heather Himmelberger, Southwest Environmental Finance Center University of New Mexico
- Bryan Garcia, Connecticut Green Bank (Expert Consultant)
- James "Tony" Parrott, Metropolitan Sewer District of Louisville (Expert Consultant)

Additional Attendees

- Michael Shapiro, EFAB Designated Federal Official

– Jim Gebhardt, EPA
– Kristyn Abhold, EPA
– Vanessa Bowie, EPA
– Sonia Brubaker, EPA
– Alecia Crichlow, EPA
– Timothy McProuty, EPA
– Pamela Scott, EPA
– Andrew Sawyers, EPA
– Ed Chu, Acting Regional Administrator EPA Region 7
– Rebecca Lewis, City of Wichita Wastewater Manager
– Julie Winters, EPA Region 3 Chesapeake Bay Program Office
– Dr. Elliott Campbell, Maryland Department of Natural Resources
– Margaret McCauley, EPA Region 10 (phone)
– Gabriela Carvalho, EPA Region 10 (phone)
– Richard Green, EPA Region 10 (phone)
– Martha Sheils, New England Environmental Finance Center
– Khris Dodson, Syracuse University Environmental Finance Center
– Glenn Barnes, Environmental Finance Center University of North Carolina
– Dan Nees, Environmental Finance Center at the University of Maryland
– John Sullivan, Great Lakes Environmental Infrastructure Center
– Michelle Pugh, Wichita State University Environmental Finance Center
– Carla Raspberry, Wichita State University Environmental Finance Center
– Ramzi Mahmood, Environmental Finance Center at Sacramento State
– John Padalino, United States Department of Agriculture
– Mary Mindrup, EPA Region 7
– Glenn Curtis, EPA Region 7
– Curtis Carey, EPA Region 7
– Robert Dunlevy, EPA Region 7
– Chuck Job, National Groundwater Association
– Members of the public and press were also welcome to attend

Day 1 – August 22, 2017

Introductions & Opening Remarks

Mike Shapiro

Tom Liu

Jim Gebhardt

The meeting began at 1:45 pm CDT with *Tom Liu* calling the meeting to order. *Mike Shapiro* began the meeting by welcoming the members, expert consultants, and additional attendees to the meeting and thanking them for their attendance and time. Mr. Shapiro introduced Tom Liu, the interim board chair.

Mr. Liu welcomed the returning board members as well as new expert consultants. He also expressed his excitement for a successful meeting, for the Board to embark on new charges, and to close out existing projects. He pointed out that two board members, Ed Crooks and Heather Himmelberger, were unable to join the EFAB in Kansas City. In addition, two of the expert consultants, Bryan Garcia and James Parrott, were also unable to attend. Mr. Liu directed members to their meeting folders where they could find information on the new expert consultants.

Jim Gebhardt introduced himself, stating that he had the opportunity to meet many of the new expert consultants during Tuesday's morning session and was excited for them to join the group. Mr. Gebhardt provided some background on EPA's Water Infrastructure and Resiliency Finance Center (referred to heretofore as "WFC" or "the Center"), which was started two years ago to help the Agency determine good decision-making practices for financing water infrastructure. All of the Center's resources are dedicated towards that effort, including those used to operate the EFAB, which resides under the WFC. The expert staff from EPA who operate the EFAB have done so for many years and continue to provide excellent support to the organization. Mr. Gebhardt added that the Board continues to be a strong point of leverage for the center due to the immense amount of expertise sitting around the table that is focused on solving nationally significant water sector issues. The WFC also has affiliation with the Environmental Finance Centers (EFCs), many of whom were present at the meeting. The Center aims to leverage the strong work the EFCs are engaged in. Mr. Gebhardt stated that the group would have a chance to further discuss the WFC's activities during a session on Wednesday.

Vanessa Bowie made an announcement about the group dinner asking everyone to provide bus money to Ms. Bowie during the break and to meet in the hotel lobby at 5:50 pm for transportation to the restaurant. Ms. Bowie also asked all board members and expert consultants to sign into the meeting on the sign-in sheet that was being handed around. Finally, she directed everyone to look in their meeting folders for the complete member roster and to notify the EPA staff of any necessary updates to their information.

Mr. Shapiro asked everyone in the room to introduce themselves by providing their name and affiliation.

After introductions, Mr. Shapiro invite Ed Chu to begin his presentation and recommended all in attendance read Mr. Chu's bio which was included in the meeting folder.

Welcome to Kansas City - EPA Region 7 Priorities

Ed Chu

Ed Chu expressed his delight to be able to host the EFAB in Region 7 and thanked everyone for attending the meeting. Mr. Chu began his presentation by outlining the unique issues that the four Region 7 states are faced with. Mr. Chu said that when he came to Region 7 about a year ago people asked him why he was moving to Kansas. There are a lot of reasons to move here including the deep history in the region, the beautiful places, and the importance of the agriculture sector. He pointed out that people looking at this region from the east or west coast have a big blind spot for the Midwest but the counties and states in the four-state region contribute significantly to the country's economy, particularly through agriculture. History and dependence on agriculture in the area means something when they talk about water infrastructure in the region. Very small communities face a major problem with water infrastructure because, since the inception of the Clean Water Act (CWA) and Safe Drinking Water Act (SDWA), many communities have been able to fund their infrastructure but not necessarily the very small communities that cannot afford to fund major large infrastructure projects. This challenge also has to do with the rural aspect of the states in the region.

In Kansas and Iowa 80-90% of the land is used for agriculture. Even the urban areas in the region are small cities compared to those on the east and west coasts. The EFAB previously provided a recommendation for supporting small systems serving populations of less than 10,000 in developing financial capacity. The Board found that without proper funding and technical assistance, challenges would be exacerbated for these small communities. The SDWA defines small communities as those serving fewer than 3,300 people. Many of the small communities in Region 7 do not come close to meeting that number with the median town size throughout the four states at just 425 people. There are more than 700 community water systems serving fewer than 100 people and, due to the large expanse of the states in the region, there can be a lot of distance between these towns, minimizing opportunities for systems to connect or consolidate. These micro communities struggle to comply with the CWA and SDWA requirements and in some cases are unable to provide safe drinking water.

Mr. Chu then turned to the financing aspect, explaining that the National Science Foundation (NSF) funded a study that found nearly 12% of communities are financially unable to afford to comply with drinking water and wastewater regulations with that figure tripling in five years. That is the national number and it is much worse in Region 7 because of their challenges with infrastructure capital, operation and maintenance, and the disproportionate impact of infrastructure challenges on micro communities.

Farming practices are getting more productive and efficient, which is good for the economy but that also means that there are fewer people needed to perform the same work in a given area. Overland Park, where the meeting was held, is an example of a rural to urban migration in Kansas City and the region at large. It becomes harder for communities to fund financing and have access to loans if their communities are shrinking and becoming more spread out.

Regulators trying to provide clean water in these communities need to do something. Mr. Chu brought a challenge to the EFAB to consider that in all environmental media, the challenges in micro communities are significantly magnified. In Region 7 they are collaborating with stakeholders like their state agencies and partners to try to address these challenges. The state partners suggested that the region serve as project manager to bring together diverse resources to assist communities and develop an evaluation system to prioritize which communities to focus on first. There are hundreds of communities in need, so prioritizing those communities through state, city, and local councils to create one-on-one connection and prioritize the communities in need is important. This will allow them to form a more structured network of groups willing to assist their neighboring communities. Mr. Chu said that they are looking to involve state universities to provide financial analysis and technical support and provide pro bono support to those most in need. The money just isn't available for these small communities like it is for larger systems. They are developing outreach and technical assistance programs and ultimately will need to work with communities to find and use innovative approaches to financing infrastructure, which is a challenge for the agency and board to overcome. All of this adds up to a serious issue and concern about micro communities at EPA. Mr. Chu shared that while no one will have a silver bullet for this challenge, he is asking for the Board's help in thinking about it and deliberating on other advice that they can offer the agency and administrator. There are many communities in the region, also elsewhere in the country, that are forgotten in how we have developed our mechanisms for supporting communities. Mr. Chu completed his presentation by thanking the Board for their dedication to public service.

Discussion/Questions

Mike Shapiro thanked Mr. Chu for his presentation and shared that more than once the Board has tried to grapple with the challenges micro communities face. He added that just because there is no easy answer does not make it any less necessary to address. He added that he appreciates Mr. Chu bringing his leadership to this issue and that he raised some key challenges that other rural communities are also facing and that those challenges go well beyond just water and wastewater infrastructure.

Mr. Shapiro ended the introductory session by explaining the process for asking questions and contributing to discussions. He thanked the new expert consultants, returning members, and guests for attending and shared that the EFAB prides itself on being a working group where a lot of the Board's work occurs in workgroups who report out at these meetings. The EFAB has a great staff providing support but the writing and analysis is done by the members themselves and they pride themselves in producing good, usable work. This model has been very successful over the years and only works when everyone contributes. He asked the board members and expert consultants to listen to the existing and new charges for opportunities for them to contribute to current and future working groups. Mr. Shapiro introduced Andrew Sawyers, the director of EPA's Office of Wastewater Management (OWM), who would layout the future of infrastructure considerations in the nation.

Infrastructure Considerations for the Next Three Years

Andrew Sawyers

Andrew Sawyers opened his talk explaining that he had spent a lot of time with the EFAB over the years. He expressed his gratitude to the excellent team that shepherds the EFAB process. Mr. Sawyers echoed Mr. Chu's points that they need to focus on how they can address small and micro system challenges. He added that it is an area that has to be addressed and they, the EFAB members, should consider Mr. Chu's challenge to them. Mr. Sawyers reminded the group that he had discussed affordability at the last meeting. They need to think about financing small systems when funding partnerships and consolidations are not an option. He added that there are some tools and resources through organizations like NRWA and others that can help these communities. Micro communities are a significant portion of all water systems in the country and their challenges need to be addressed.

Mr. Sawyers noted that OWM covers many programs, such as the NPDES process, that have aspects that address infrastructure moving forward. The office also contains the Water Infrastructure and Resiliency Finance Center (WIRFC), the Water Infrastructure Finance and Innovation Act (WIFIA), the State Revolving Fund (SRF) programs, and smaller programs like the Mexico Border program and Alaska Native Villages program. There is a series of issues across these programs. Mr. Sawyers said that he would share a few areas they can focus their attention on.

- He pointed out that the **age of infrastructure** is a pervasive challenge that needs to be addressed. He said that he remembered managing the Maryland SRF and that there were a lot of infrastructure challenges in Baltimore due to aging infrastructure. Many assets had surpassed their useful life. There is an urgent need to double down on expanding funding to projects that address affordability and the useful life of the infrastructure.
- He also mentioned the challenge of **declining populations** in rural communities. Rural communities are losing population, leaving a smaller sector to try to pay for the infrastructure going forward. These challenges, aging infrastructure and declining populations, are issues that need to be addressed. The EFAB is helpful to the agency and the agency will lean on the Board for support in addressing these challenges.
- There is a **need to measure progress** in order to determine if existing funding for infrastructure has been successful. There is a $155 billion infrastructure investment and $60 billion of that is in fed investment. They need to start telling this story about what they're doing to change water infrastructure financing going forward. They believe in big projects that can change how we address infrastructure financing. A lot of things collide with private sector engagement and non-profit engagement and technology are also critical components.
- The agency is **thinking big** and looking for big ideas to change infrastructure going forward. They want to be able to measure progress and communicate progress to stakeholders. The public sector is always going to finance water infrastructure. There is currently $100 billion in annual transactions and the federal government is involved in less than 10% of those transactions.
- They are considering **the role of the private sector**. Infrastructure investment currently happens in the private and public sector within the states. There is a balance and they want to make sure that as private investment is being expanded that the communities that need the support most are still getting it. Several roles, including that of the federal government, state government, local government, and private sector need to be considered. The agency looked at nine public-private partnership engagements across the nation to try to take lessons learned about why the engagements did or did not work as planned. Stakeholders are asking for the Agency's opinions on the private sector getting involved and they want to provide that perspective. They want to determine what the right role is for P3 or private sector involvement in financing wastewater and water infrastructure projects. There is a significant interest from financing agencies who want to get involved and help smaller systems build capacity.
- Another area of focus is on **asset management**. One big issue right now is that there aren't enough resources or funding sources to make sure O&M is funded. In Maryland, they looked at making sure they had coverage beyond the bare

necessity to make sure they were able to take care of other issues. Asset management is critical so that maintenance can be based on timing instead of a fix-when-fail approach.

- **Technology** and advances in technology are very important in the water and wastewater space. Mr. Sawyers' colleagues in OWM are trying to communicate that technology advancement is incredibly important. Tools like predictive analytics will also be important for planning purposes. There are great projects across the country where the system can monitor everything that is happening in real time. If there is an upset or issue in the system, they can divert flows. These systems rely on sensors throughout the system for their data. Something else to consider with technological advancements is that they may cause increased efficiency which could lower labor and workforce needs. These interconnections need to be considered and planned for.
- Another area to consider is **workforce planning**. This is a significant issue for the sector because the water and wastewater industry is not seen as an attractive industry to many young professionals. Across the industry the agency is seeing a deficit for skill sets needed to continue expansion of water and wastewater services without training professionals.
- **Sustainable revenue models** are another area of interest. The sector needs to look at how to finance green infrastructure and stormwater solutions. It is an area of concern for the agency to be able to help communities finance their obligations for stormwater particularly because there aren't enterprise funds available for most stormwater projects. There is some pushback in areas like Maryland to create funds to address stormwater. As always, it is important to think about these challenges for small systems as well as traditional systems.

Mr. Sawyers ended his talk by posing a question to the EFAB: how does the federal government use the breadth of its resources to **leverage more efficient markets**? There is an opportunity to use federal resources to expand and create more efficient markets, like resource recovery in wastewater systems. The challenge is how they can use assets like the SRF programs and private sector interest to expand those opportunities.

Discussion/Questions

Rudy Chow asked to touch on what Mr. Sawyers had mentioned about public-private partnerships. He pointed out that small rural communities in need of technical and managerial support could leverage larger public utilities for those needs.

Mr. Sawyers responded that the peer to peer exchange, also in their office, is focusing on that issue. There are many systems with fewer resources and others that are more resource engaged who may be trying to provide a service. Blue Drop is an example of a service entity provider for DC Water. There are other organizations, like Moonshine, that act as a clearinghouse to match utilities who need a service with one who can provide that service. He added that Mr. Chow was absolutely right that bigger utilities can help those more constrained.

Joanne Throwe asked about the technology component of Mr. Sawyers' talk. She pointed out that some reports show that they need new innovative technology to solve some of these challenges. She asked what the agency's position was on spurring that technology and what their mission on this topic is.

Mr. Sawyers stated that his colleague travels across the country to pull new information from conferences and meetings. They will continue to share the innovations, new platforms, and new things that they are seeing. The agency is trying to think within their permitting framework about how to be more flexible. They have been talking about financing technologies and how to expand on current tools. For the most part, they are focused on trying to educate, advocate and share what they can. They do recognize how critical advancing technology will be going forward.

Mr. Shapiro added that a thought leader at EPA had already been helping others find innovation clusters around the country. One example was in Cincinnati where private companies and universities partnered to share information and undertake projects. This allowed the government to partner with the private sector. There are around 20 clusters around the country that are sharing their experiences. The agency doesn't have a large budget for innovation but they are trying to leverage their position to stimulate creativity and innovation. Mr. Shapiro added that, compared to when he started working in the water and wastewater sector, the perception of the sector as a place where there is innovation has dramatically shifted.

Yvette Downs brought up the topic of asset management in the context of technology as an area where smaller agencies could benefit from knowledge sharing from larger agencies. She added that P4s, public-public-private partnerships, could be a good approach to facilitate those relationships. Going back to Mr. Chu's presentation, she added that micro communities may not be able to purchase larger technology but if they can partner, they can gain access to it.

John Padalino added that water utilities can also partner with other infrastructure providers like electric utilities. Electric utilities offer members predictive analytics, billing financing options, off-grid solutions, and other benefits that water and wastewater partnerships and customers could use. They can also consider partnering with the telecomm industry since all of their technology would have to include a communication component as well.

Jeff Walker brought up affordability, saying that he would like to hear about how they can teach people what it really costs to deliver resources. He added that they have to define what it actually costs and the alternatives. A group like this, the EFCs, the agency, one of these groups should give decision makers a tool to help people define the true cost of water.

Mr. Sawyers agreed with Mr. Walker's point about the true cost of water being very important. He added that the EFAB has previously tackled a value of water issue drafting a full cost pricing document. It is not the sexiest message but it is important and the EFAB is a group that could better engage on how to talk about it. They cannot talk about affordability without recognizing what water actually costs.

Brent Anderson agreed with the importance of not forgetting micro communities and shared that the idea of thinking big also resonated with him. In a lot of ways figuring out what the public-private partnerships need to fit into the water sector box might be a big issue. In a world where everything is changing quickly it can be challenging to regulate on a detailed level because they can't always stay on top of the changes. How do they get comfortable painting within the numbers? He pointed out that he was not saying they needed to get to a particular mile marker but instead that they should be comfortable heading in a particular direction. If they were able to take advantage of private sector examples and get comfortable just staying within the broader lines it would be a big shift. He asked if that was something EPA would comfortable with.

Mr. Sawyers responded that it is hard to put everything neatly into a box. They do try to compartmentalize and take on bite size pieces as they go along but there is a recognition that when you try to take small compartmentalized steps, you are not addressing underlying steps. A portfolio approach is necessary but incredibly difficult. There is an issue here where the EFAB can help the agency reimagine water and wastewater investments in various pieces. He added that he agreed with Mr. Anderson's point and that they do need to think expansively with an outcome in mind but he didn't have an answer about how.

Mr. Chu added that there has always been tension in a regulated world about consistency. Micro communities don't fit into the overall discussion and they get left behind because it doesn't work for them. What is the cost of delivering? It is outrageously high so it is instantly a failure in that context. We can talk about technology and it may work for a group but the way we view the world for providing safe drinking water doesn't work for all communities. When we talk about the true cost, there is no disagreement but how do you actually get the infrastructure to communities? They can't afford it, no matter what.

Mr. Chow commented on Ms. Throwe's point that there is not a lot of fear about technology advancing. Private industry will catch up if there is a need. Asset management is predicting failures in advance, if there is a need and demand to provide better technology for asset management, industry will meet it.

Eric Rothstein commented that he was concerned they were not going far enough. He added that it is difficult to talk about financing without recognizing structure challenges. When there are thousands of utilities, it is by definition inefficient. The governance structure allows everyone to have their own fiefdom, which is a fractured system. The current incentive structure keeps it that way. He added that regionalization, where a regional system supports community systems with their own operations, could improve that structural challenge.

Suzanne Kim asked if there was an opportunity, through WIFIA or another loan program, to make a large system partner with small systems to help them overcome challenges.

Mr. Sawyers shared that they have a recently completed document about financing non-traditional eligibilities in the CWSRF program. The broad explanation is that a municipality receives a loan with a reduced interest rate as compensation for also sponsoring a nontraditional project. It is important and they are trying to expand that approach with other larger municipalities to provide that support to small systems in neighboring communities.

Mr. Chu added that, at the regional level, they are thinking about working with state and local governments and tribal governments to refocus relationships to the governments closest to the people. The regional office sits a step removed from DC and he works with the state governments who then work with municipalities. Economic efficiency and management-wise it makes sense to combine but due to the cultural history of political considerations of working with individual communities that isn't how it always works best.

Aurel Arndt brought the conversation back to the topic of an aging workforce. He said that it is a challenge and a risk to utilities to sustain operations. There is a silver lining in bringing younger people into the sector - younger people moving into new positions could bring different ideas as they are not constrained by decades of experience. They have several annual conferences with student and young professional poster sessions that focus on research and innovative technologies. Students and young professionals are bringing new ideas to the game. If they can grow that interest, there is an opportunity for the sector. He added that while there is a limited availability of funds for innovation and technology, the biggest component in EPA's budget is SRF funds. Those funds are already there and could be used to provide incentives and bonuses for innovation and technology beyond how they're used now. He added that it would not diminish the money going into investment already because technological investments have a longer term payback and could provide additional savings.

Mr. Sawyers added that it is an eligible area for SRF funds, stating that municipalities could use SRF to finance technology. He added that it is also part of the WIIN act and it would put together an innovation fund to encourage what Mr. Arndt brought up. Many SRFs are actually already funding technology and WIFIA can finance that area as well.

Mr. Arndt added that the states could include set asides for innovation, grants, earmarks, and reduced interest rates.

Linda Sullivan added a comment about emerging contaminants. She wondered if they could utilize technology to understand contaminants of emerging concern. For example, when they look at algal blooms, cryptosporidium, or lead, how do they wrap their heads around the issues? She added that contaminants of emerging concern are a real issue for the industry and they need to get their arms around it. They need to look at infrastructure issues as well as contaminants in order to provide safe, clean and reliable water.

Chris Meister added that, under thinking big for the agency, that the problem of micro communities is a challenge for the entire country. EPA has an opportunity to provide financial incentives for governmental consolidation. EPA can engage with the states or counties to encourage local communities to rid the 19th century structures that need to be left behind to look forward for services. He added that the beauty of the EFAB is they are focused on financing. Previous experiences with grants have shown them that people will walk 100 miles to get a free dollar but if you discuss refinancing their mortgages their eyes glaze over. Financing is money you have to pay back versus money that comes free.

Daniel Kaplan added that they also have to think about dealing with externalities, particularly on the wastewater side. Last week there was a story about the dead zone in the Gulf of Mexico. One of the solid waste reports referenced what could be done in industry to design packaging that has a lower disposal cost. Encouraging thinking at the source level about what is causing the issues. For the Gulf of Mexico, we know fertilizer is impacting the dead zone but it is not a problem just for the farming communities using the fertilizer but the people consuming food produced in that manner.

Mr. Sawyers closed the discussion concluding that there is a lot for them to think about and there may be some projects that emerge from their discussions this week. He added that he would be happy to engage with members after the meeting on specific issues brought up during discussion.

Mr. Chu brought up that they have a nutrient reduction strategy for Iowa farmers and other partners to reduce nutrient loading in watersheds. They have found that it is all about money. He added that the micro community discussion is really about communities that need funding to do a lot of these things, like reduced nutrient loading, because it doesn't come at zero cost. If there was more money and they could provide funding then these challenges could be addressed.

The group took a short break and reconvened at 3:37 pm.

Report Out: Financing Domestic Recycling Programs

Jeff Hughes
Bill Cobb

Mike Shapiro introduced *Jeff Hughes* and *Bill Cobb* to provide their report out on Financing Domestic Recycling Programs.

Mr. Cobb started the report out by explaining the work they had done since the meeting in February in DC. Participant folders included a rough outline and the working group has a more complete document drafted that was not included in the packets. The background information in the packet was what they received from the agency and what came out of brainstorming efforts from the workgroup. About three weeks ago, based on the back ground information provided, Mr. Hughes and Mr. Cobb met with the EPA client to get a sense of whether or not they were heading in the right direction. At the end of the day it is really a conversation about money, encouragement, and the true cost of recycling. There is no real silver bullet because there are a lot of challenges to consider. Recycling as a service feels a lot like water. In major communities things click along fine but in rural communities it is much more difficult to have the conversation. Something that they discussed during brainstorming was thinking about how cultural changes drive regulations or policy changes. EPA staff showed relatively low interest in recommendations around policy and asked that be dropped from further consideration even though the working group had done some initial brainstorming around that idea. EPA's direction was to focus on the residential aspect and determining how you make it more affordable at the community level - thinking curbside and individual residents.

Over the weekend the working group circulated the draft paper and revisited the conversation to see where they were relative to the case studies they reviewed. Some of the feedback from EPA staff was that, at its core, they liked what the group had done and they recognized that there were no silver bullets but had thoughts about including more details in case studies. They suggested looking at consolidation or collaboration regionally, things around integrated fees, and more detailed content in general. They talked about that as a group this morning in the break out. They are trying to determine if they need to keep googling case studies or if what is there is sufficient, recognizing that there is no silver bullet.

Ms. Kim will do a little more work on pulling information regarding work she has done is California and Martha Sheils will pull from what she has done in Maine but, fundamentally, the workgroup is planning to let the product stand on its own feet. The intent is to get it completed in the next couple of weeks and then have it reviewed by the group. They will circulate a draft for review and comment by the Board after that.

Mr. Hughes added that some new members weren't around for the discussion last time and provided the "Cliffs Notes" version of the charge. There are ways to generate revenue beyond the sale of recyclables. They would like to say you can have state-wide fees and they got the impression that is the type of approach that had not already been looked at. The innovation in the paper is just creative ways to use financing, aggregating, and covering costs in the sector like any other sector.

Discussion/Questions

Lisa Daniel commented that the punch line is that, in order to make this a robust discussion, there needs to be a policy element. There will be a paragraph to that effect in the report because they can't ignore it if they want to move the needle.

Mr. Cobb concluded that he spent his lunch hour listening to a webinar on recycling and consumer behavior. That session confirmed what Lisa just said, that at the end of the day this group found that consumer behavior and what goes on at the curb is tied to accessibility of the programs and the way we, as individuals, engage the notion of recycling. Seattle is often thought of as a green metro area. Their programs are culturally embedded in their behaviors. It is part and parcel with the northwest vibe. Core values, personal commitments, and doing the right thing environmentally are key elements to their culture. The concluding statement in the webinar he watched was "heavy handed regulations always work." Even though they were instructed to not focus on that particular element, they will need to include it as part of the group's "observations" given that there are no recommendations in the report. Mr. Cobb added for the new board members that once the document comes out of the working group and everyone in the group is comfortable with the product then the full board reviews and comments. Once it has gone through both reviews, then it will go to the agency. The workgroup is aiming to get the report to the full board next month.

Mr. Kaplan added a Seattle perspective that there is recycling of cardboard and plastic but also food waste and compost.

Angie Virnoche also added that Seattle was considering monitoring garbage and if they saw people throwing things away in alternate containers they would be fined. There was big push back on that.

Mr. Shapiro asked if there were other recommendations in the report aside from the conclusion about the need for regulation to make it work.

Mr. Cobb responded that they were considering their outcomes conclusions or observations instead of recommendations.

Mr. Hughes added that there are some examples of initiatives from groups that think if they can provide lower cost capital they could do it but that isn't always enough so it didn't get the group excited. Revenue aggregation techniques and other examples are included in the report and they think they could work but they do end up falling into policies and regulations.

Ms. Kim closed the discussion by adding that in California there is a program to provide lower cost financing, they also have designated areas where the locality provides permits, technical assistance, assistance to get through the loan process, and extra incentives to get them involved.

Report Out: Public-Private Partnerships for Water Infrastructure Projects

Lisa Daniel
Richard Weiss

Richard Weiss began the report out for the Public-Private Partnerships for Water Infrastructure Projects workgroup. He provided an update of the charge since the last meeting sharing that they discussed some P3 case study alternatives developed by the EFC at UNC. As part of last spring's discussion the group decided it would be good to develop a letter to the new administration to indicate how the EFAB can be a continued resource to the agency. Since the last meeting they did develop the letter which is included in participant packets. The letter was sent on June 14th and they already received a response from Administrator Pruitt about having a dialog around the report. That is the primary accomplishment in this period.

Ms. Daniel reported that the group received a draft charge prior to the meeting. The working group reviewed the charge that morning and had a robust discussion with their new expanded workgroup. She added that she thinks it will turn into a good work product especially with the new perspectives. The charge is being reviewed and will likely be amended. In a sense, the workgroup will help provide some key thoughts for decision makers as they think through financing or developing projects. Not just P3, but alternative and traditional financing. They will consider what an administrator of a utility or other stakeholder would think about when approaching the decision about how to finance a project. They will come back after chicken plucking digesting the charge with some consensus including defining terminology about what a P3 is, what pre-development needs and activities are, as well as further defining the charge.

Discussion/Questions

Craig Holland added that EPA Region 3 has already done a lot with P3s and wanted to make sure the Board wasn't reinventing the wheel on what has already been done in this space. He added that they should make sure that they are using the resources they can access to identify the gaps and address the charge.

Mr. Kaplan reiterated what Ms. Daniel mentioned, that the focus should be on what an administrator should know to finance a project. For many wastewater and water utilities, the administrators are engineers or people with policy backgrounds. He wasn't sure that they would be thinking about how they finance it but more so where it will fit within their capital program, given the resources they have. Mr. Kaplan shared that Seattle went with P3 for the water filtration plant and the pitch he heard was based on what the organization was capable of, what they had done in the past, and their available background and resources. That is why they chose to approach it as a P3. With that as background, it is also important to consider state laws. A recent paper showed that a number of states don't have the authority to do non-transportation P3s. That is something we need to keep in the mix when we think about P3s.

Mr. Holland added that a lot of communities have found ways to get around not having state authorization to do P3 type projects, like providing funding through economic development agencies. Instead of saying you need to change the rules at the state level we could show examples of ways to get things done creatively despite state limitations. Having that knowledge would benefit the report.

Mr. Anderson asked if the report was about best practices for a P3 selection process versus implementation.

Ms. Daniel responded that they want to zero in on that. They talked about the term "best practices" and whether it is a fair term for this undertaking. She added that they also discussed what pre-development activities would include, considering whether they would include decision making as well as procurement.

Mr. Anderson shared that he though it seemed like a key distinction. P3 is at some point a contractual agreement. It is different from a performance contract because it includes a finance component.

Janice Beecher added that when she looks at a description like this, that it will be just as important to look at failures as it will be to review successes. She encouraged the workgroup to look at the causal component of a failure or success. She also suggested they look at capacity to engage in the process, systems of accountability or transparency, and if there is an improvement in public health or environmental response. There could be unintended consequences to P3 partnerships and those possibilities should be kept in mind during the decision making as well.

Ms. Downs agreed with Ms. Beecher and emphasized that the workgroup will examine definitions and outcomes. She asked how a system gets to the point where they can decide that P3 is right for their community and what a P3 program would look like before a procurement. Does pre-development include all of the necessary thought process to get to that point?

Ms. Daniel responded that she thought that was correct.

Mr. Liu interjected asking for next steps for the workgroup.

Ms. Daniel said that their next step is for the workgroup to come together to talk about the scope for the charge. They will start with a first cut at revising the draft charge, hold a conference call, and then go from there. At the same time, the WFC has a first draft of the outline that the Center will flush out and then share for some back and forth with the group. In the next month the workgroup will try to have their first call.

Mr. Liu thanked Ms. Daniel, Mr. Weiss, and Mr. Meister for their work to put together a well-articulated letter to the administrator.

Mr. Shapiro added that while it took some time to refine, it made an important statement and emphasized the role that the EFAB can play in the agency in the future.

Report Out: NEJAC / EFAB Collaboration

Hope Cupit

Hope Cupit provided a report out for the NEJAC/EFAB collaboration workgroup. She started by acknowledging that there were many different voices writing the paper and that it still needs to be organized. The workgroup will meet again in October and will have a finished product to go over with the EFAB at the spring meeting.

Mr. Shapiro asked Ms. Cupit to provide a summary of the project for the new members.

Ms. Cupit provided some background, explaining that the workgroup is made up of some members from the EFAB who are collaborating with NEJAC committee members to work on lead issues. That group focused on a wide range of different populations the EFAB doesn't usually focus on. The charge was more in line with how they improve conditions for people dealing with lead and the poverty in those communities. Having two distinct perspectives from the participating groups did not blend well in the initial draft but they are hopeful that they can pull it together so that it meshes well when they give the full board a complete report to review. The paper is currently 57 pages so one goal is to make it shorter and more accessible.

Mr. Shapiro added that the report isn't really EFAB's paper but more a product that EFAB is providing input on.

Ms. Cupit concluded that the next steps are to have the law students finish putting the paper together, for the group to meet about the final paper, and then to bring the final paper to this group for the next meeting. She also acknowledged the support Blanca Surgeon, Heather Himmelberger, and others had in the development of the paper.

Summary of Day One

Mike Shapiro
Tom Liu

Mr. Liu thanked everyone for a very productive discussion at the culmination of Day 1 of the meeting. He added that there is a lot of passion in the Board which is great to see. He highlighted some take away points from Day 1:

1. That EFAB is a working board. The success of the Board is based on the fact that everyone is able to contribute. His first project on the Board was on coal, something he didn't know much about, but he took it on himself to learn. He made the point that while you may not be an expert in an area, there are experts on the Board. Everyone can contribute in their own way by getting involved in current work projects and new charges.
2. He applauded the substantive discussions that occurred during the morning workgroup meetings. He added that a lot of the groups have a good vision and path forward to finalize their reports.
3. That the report outs and updates from today showed good progress and that most charges are on track.
4. He thanked Mr. Chu for his remarks and additions to the discussion. EFAB will often meet in regional offices so to have the regional perspective is great for the Board to hear. Being able to hear more about particular issues that they don't always see in day-to-day work is important.
5. Mr. Liu thanks Mr. Sawyers for the challenges he presented to the group emphasizing the think big challenge. There are a lot of challenges to address here and everyone needs to think big to do that.

Mr. Shapiro echoed Mr. Liu's remarks adding that when we talk about environmental problems we talk about the easy problems that have already been dealt with. The problems we are faced with today are more complicated and harder to deal with. It is the same in the financing world. Some of the easy things to finance have already been financed and now we're in challenging areas like small system financing, recycling, and other areas that are tied to social challenges, areas where the markets may not be where they need to be to support solutions. The fact that we can continue to make progress moving toward those solutions is important.

Mr. Sawyers added that the P3 discussion will be something for the whole board to engage in. There is a lot of interest from within and outside of the agency in how to think about P3s going forward. To Ms. Beecher's point, it is important that as we talk about the emerging conversations. We should also consider the unintended consequences from P3s.

Ms. Bowie announced that the first round of buses would depart for dinner at 5:50 pm.

Day 1 of the meeting adjourned at 4:23 pm.

Day 2 – August 23, 2017

Opening Remarks

Mike Shapiro
Tom Liu

The Board reconvened on Wednesday, August 23rd at 9:07 am. Mr. Shapiro started the meeting by thanking Vanessa Bowie for arranging dinner the evening before. He added that the Board had a busy day including informative presentations and progress reports.

Mr. Liu thanked everyone for coming out to the dinner the evening before. It was a great opportunity to get to know each other.

Mr. Shapiro turned to Mr. Gebhardt for an update from the Water Finance Center.

Update on the Water Finance Center's Activities

Jim Gebhardt

Mr. Gebhardt opened his presentation by explaining that their official title is the Water Infrastructure and Resiliency Finance Center (WIRFC) but they often refer to it as WIRFC or the Water Finance Center. He reiterated Mr. Sawyers' point that the WFC sits within OWM but that the center also serves the Office of Groundwater and Drinking Water (OGWDW). He said the Center can be thought of as two things, a think and do tank and an information assistance center. They do not distribute dollars but are moving the conversation about tackling national water infrastructure challenges. When they talk to groups they underscore that they are an information assistance center. The WFC's mission statement is to provide financing information that helps local decision makers make informed decisions about drinking water, wastewater, and storm water funding solutions to protect human health and the environment. Mr. Gebhardt explained that the Center is resource challenged but has a dedicated team of 9-10 FTEs of staff at the agency. They have the ability to staff up to 13 FTEs and are also looking to leverage critical resources around them including their colleagues in OWM, OGWDW, and in the Water Infrastructure Division with WIFIA, Water Sense, the CWSRF, and Sustainable Small Communities branches. Beyond the agency itself, the Center also looks to leverage the EFAB and its resources and the regional EFCs. Collaborations between these groups and the Center have been robust. The Center is looking to continue to intensify these relationships.

Mr. Gebhardt proposed to the Board that, although they don't have financial resources at their disposal, the Center can impact water infrastructure nationally by focusing on four strategic areas. The Center provides:

1) A research function.
2) The ability to provide meaningful advice to folks on the national landscape, including federal and state partners, local partners, and foundations and philanthropies looking at the water sector. Increasingly conversations with foundation and philanthropies about their entry into the water space is an emerging focus of the Center.
3) Innovation. This gets back to Mr. Sawyers' point of being able to think big. There is a sense of understanding about the tools that are available but sometimes reorganizing toolsets can help to make them more accessible. The Center is looking at new ways of putting packages together to take full advantage of tool applications.
4) A networking function. The Board and the EFCs are central to the Center's networking mission. The Center is engaged in each of the 10 regions hosting regional finance forums to bring local decision makers together. They are often focused on local decision makers that might not be able to attend the bigger conferences. Their goal is to conduct forums in all 10 regions. Presently, they have conducted forums in seven of the regions having just completed one focused on small systems in Alabama in July. The next forum is scheduled for September 12th in St. Joseph, Missouri. As the forums have gained momentum the participation has grown from region to region. They had record participation at the two events held in California with about 400 total participants. They are looking to provide a Region 8 forum over the winter and will then close the loop with a Great Lakes forum in Region 5 in late spring.

Mr. Gebhardt mentioned a Region 4 EFC research initiative which included a review of the alternative delivery approaches undertaken by nine communities around the country. The report includes all of the research officially delivered to the marketplace, which is available right on the website. EPA did a companion piece which also addressed what alternative delivery is. This past spring there was also a roll out of a technical review of the DC Water Environmental Impact Bond, which was presented at the last EFAB meeting. The impact of this work is to give the marketplace a clear look at the value proposition, how the deal was put together, the finance mechanism, and how project risk was allocated between investors and DC Water. There is another report due out in September that looks at the role of 13 western state SRF programs in underwriting projects with a drought resilience focus. There is an ongoing initiative, the National Drought Resilience Partnership, which is a 13 federal agency collaborative directed pursuant to a 2016 Presidential Memorandum that is still outstanding. The drought resilience investment report is one of the agencies contributions to the NDRP 13 agency collaboration. Another upcoming report is the product of a Center initiated collaborative with outside foundations. The report looks at small community challenges in the water space, specifically finance leadership practices that can best serve communities in need. That will be an impact piece because it provides ground rules for local decision makers for pre development and development challenges including how to put funding in place. Sonia Brubaker has been instrumental working with foundations and getting the document off the ground. A companion follow-up piece will be released from EPA that is geared towards emerging state philanthropic engagements in water.

The WFC is also putting together a series of webinars which invite national experts to speak on water sector challenges and solutions. The current series is focused on stormwater series and there should be webinars scheduled soon. In term of the EFAB and EFCs work, the Center is looking at opportunities for webinars focused on the report outs from the Board. They need to determine the pros, cons, and audience but the sector may benefit from having some findings broadcast more widely.

Mr. Gebhardt turned back to innovation explaining that Kristyn Abhold, with the EPA WFC, would provide a short tour of the new Water Finance Clearinghouse tool. The clearinghouse was released on July 26th and is designed to be a one stop shop for financing water. The conversations the Board has already had today on water technology and the role SRF could play in the realm are directly tied to what information is available through the clearinghouse. The WFC operates in both a scripted capacity as evidenced by its product delivery and also operates in an unscripted capacity. Naturally this leads to dialogs with water sector stakeholders regarding new ideas are, how to assess them and move them successfully from concept to the marketplace. For example, is water technology scaling to the place it needs to? There is an effort underway to get position mid-sized utilities to get more aggressive on water technology. Currently, mid-sized and small utilities are stuck paying the bill if the technology fails. A group of 11 philanthropies are putting together a water innovation fund that would de-risk promising water technologies that have been successfully tested but not yet adopted. There is meeting in Denver in late September that will bring together interested parties to fine tune the model. The goal is to gain stakeholders and move into an operational phase. The model places the technology risk on investors by having them invest in local communities through performance contracts. Investors provide investment dollars to technology companies to deliver the technology and then the success for the investor is the effective performance of the technology which is rewarded by repayment. If the technology does not perform, the failure falls on the investors. There is still a long way to go but the WFC is committed to being part of the conversation. There may be other off the beaten path opportunities, like whether there are remaining SRF funds that could be co-invested in the water innovation fund. This gets back to the discussion that Mr. Arndt introduced yesterday about the role the SRFs could play in innovation of technology. The SRFs are highly successful lenders but there are other product development opportunities such as the relatively untapped guaranteed capacity and the investment authority, each of which can further the water mission. Pennsylvania has done a lot of work to development its investment authority and others are looking to see if, instead of allocating all available cash in treasury bills, there may be opportunities for higher use. There is an emerging conversation around water technology may be a higher use investment opportunity. The WFC will continue to engage in this and other areas in order to give life to emerging ideas that may impact the sector going forward. Jim Gebhardt turned to Kristyn Abhold to introduce the Water Finance Clearinghouse.

Kristyn Abhold thanked the Board for having her speak and asked if anyone had attended a Water Finance Clearinghouse webinar yet. Approximately half of the Board had already attended a training. The Clearinghouse was launched July 26th and Ms. Abhold has been hosting regular webinars since. Additional webinars are scheduled for August 24th and 31st. The intention of the webinars is to make sure people are familiar with the tool so that they can help show others how to use it. The Clearinghouse is two searchable databases in one. One focuses on water finance resources like reports, case studies, online tools and guides - essentially, things that help communities access financing. It includes overviews of different financing programs like the SRFs, USDA Rural Development, and tools and guides to help communities reach financial resiliency. Communities often struggle with rate setting, asset management, and financial planning so the Clearinghouse provides resources that support communities in building financial resilience. The second database includes funding and financing opportunities for water-related projects. This includes funding from federal agencies, state-level entities, NGOs and foundations, and local government. The databases are searchable and information can be accessed in a number of ways from the Clearinghouse. She encouraged members and attendees to visit the site or sit in on an upcoming webinar to get a full demonstration of the tool.

Ms. Abhold shared that they had to ask themselves how they would be able to maintain a database with funding information. The database includes a lot of information on the programs - current funding level, contact information, information on applying, and a brief description. They have taken a two-pronged approach to maintaining the content. They also wanted to ensure the database was kept up to date as close to real time as possible. All federal sites for funding and some states send out a spreadsheet once a year and then it gets updated annually but most funding programs are on different cycles and it gets out of date within a month of being posted. It is a contributor portal. Anyone who works for a funding agency and who wants to add or manage content in the Clearinghouse can become a "Clearinghouse Contributor" and suggest edits, deletion, and additions to the site. All suggestions have to be approved by EPA but once approved, the update will appear in the Clearinghouse. There are nearly 100 Clearinghouse Contributors right now. We are largely relying on people from the state offices to maintain content. There has been a lot of positive feedback already from communities and stakeholders who appreciate that they can receive updates when new content is added. They can elect to get an email notification about content relevant to them. The Center is already thinking about next steps for the Clearinghouse. There are a lot of good and substantial ideas coming from within and outside of the agency. They want to continue improving the system to best meet the needs of the stakeholders. Ms. Abhold shared that they are currently working on developing learning modules to include in the clearinghouse. They will be online step-by-step guides on finance topics. The concept is similar to Kahn Academy and will provide an easy way for users to access information. The learning modules will not include tests and users won't need to start at the beginning to access content they're interested in. The team is working on seven topics right now: water loss, disaster recovery, stormwater, decentralized wastewater systems, agriculture, the SRFs, and public-private partnerships. There has been a lot of interest in the learning modules because people don't have time to read 30 reports on a topic to get a sense of best practices. The second piece the Center is already talking about including is water finance data and analytics. In the sector they don't always do a good job of collecting data, especially on water infrastructure finance, and they also don't do a good job visualizing data and making analytics accessible. They are looking at how to incorporate that into the Clearinghouse. Ms. Abhold concluded her presentation asking the Board to share anything else they would like to see in the tool and reminded them that it would not be a static tool but rather something that they want to continuously improve to meet stakeholder needs.

Mr. Shapiro thanked Ms. Abhold for her presentation and shared that, having sat through a few presentations and clicking through the site himself, he thinks it is a good tool that will be helpful to learners and practitioners.

Discussion/Questions

Tracey Mehan directed his question to Mr. Gebhardt stating that having followed the water technology discussion for years he didn't think that the lack of risk or venture capital was the primary limit to innovation in the sector but rather that there is a lack of fundamental research compared to the energy sector. The lack of a profit motive and drive for shareholder value and the culture of compliance also play a role. They can't do much about research and development but what about engaging the Office of Enforcement and Compliance Assurance (OECA) and regional enforcement people? What about creating safe harbors, adaptive management, and an environment where innovation is encouraged? He shared that, absent of new attitudes on enforcement, he wasn't sure how true innovation would occur.

Mr. Shapiro responded that what Mr. Mehan mentioned was not really within the WFC's role within the agency. The way new water innovation ideas intersect with the Center is how you can deploy funding resources to a fund innovation in a strategic way. They are looking at what the value statements are when evaluating these types of things. They aren't suggesting anything in particular but are willing to have a conversation about what the parameters of engagement could be.

Mr. Mehan clarified if they were talking efficacy without talking about regulatory actions.

Mr. Sawyers said that Mr. Mehan's point is one they do think about when coordinating finance with discovery and OECA. They had a WIRFC conversation the prior week about how they should look at the regulatory framing, to the extent there are flexibilities, to help incentivize innovative technology deployment. They have an old regulatory paradigm and much of the new conversation is pushing the boundaries a bit. That is occurring in a difficult space in the agency but Mr. Mehan was correct that they need to engage OECA and enforcement and research and the states. If they can find flexibilities they will take that path forward but it is not an easy fix and requires a lot of coordination moving forward.

Marie Roberts De La Parra asked if Ms. Abhold would be able to share links with content to post about the clearinghouse, such as promotional materials. Ms. Abhold said she would provide that following the meeting.

Mr. Weiss pointed out that in the contractor technology development he has been involved in he had seen a couple of situations where they would bring in special insurance companies. He offered to send a little more information on that to Mr. Gebhardt.

Ms. Beecher added that an important conversation needs to occur about who should support the costs of trying to achieve the goal. Regulations have focused attention on this and some new models and methods for regulations are trying to get to this point. She raised a question about whether in the water sector, things are complicated by the public role. Even in the private sector, there is concern about whether rate payer dollars should be used to support research and development. Government dollars can support research but development is different and gets into a risky area. She asked the group, what a market failure would be. There is a lot of innovation already out there. Her second point was that the discussion about designating leftover SRF funds made her nervous. If the funds are being left on the table, they should figure out why.

Mr. Gebhardt responded that with any financial institution, especially mature programs, there will be cash on the balance sheet. You can allocate in the Intended Use Plan (IUP) that these are dollars available for projects. People will list projects, get the projects scored and ranked in the plan. The SRF will line up cash against the projects, and put the cash out there but all of the cash doesn't get consumed, you never go to zero cash on the balance sheet. The dollars are going to the right place; we're just talking about the cash that didn't get to a project because the project didn't move forward for any number of good reasons. The intention of the prior conversation is to talk about getting more value out of the SRFs.

Ms. Beecher said that it might be appropriate to have designated dollars towards it. There might be an opportunity to have points for innovation in the scoring of funds by developing a more refined scoring method that addresses it. She added that when you put public dollars at risk that raises important questions that might rise to a legal level. When you get to the issue of innovation, the temptation is to take risk away when you really want to maintain some risk. The ones willing to push a little are the ones to reap the benefits. Utilities want return without risk and that can stifle innovation.

Mr. Gebhardt stated that the SRF dollars are risk capital. The federal government provides the money to the states to go forth and make loans to induce projects to address public health and clean water challenges. He added that there is nothing in federal statute that says the dollars cannot be at risk. Given that and the fact that the balance sheet positions are strong, SRF Administrators can think more broadly about tackling these problems. Innovation challenges could be a good match.

Mr. Meister said the discussion brought up an excellent point and that another possible benefit the WFC could provide the states is some model language about why the SRFs are different. Most state SRF funds are governed by state statutory parameters on state investments. If EPA can say "SRFs are different and here is why" and there is a percentage of the SRF that could be exempt from the very low risk statutory mandates then they may give the local SRFs standing and credibility with state legislatures to say "in this case, x percent is open for innovation risk capital with high returns". That is a difficult conversation for them to have especially when all the state statutory imperatives are focused primarily on keeping it safe.

Mr. Sawyers said that was something that would be a state decision and that many states would be wary of this conversation. He asked Mr. Meister if this was something he could see as an options for his program.

Mr. Meister responded that he could. Illinois did conduct two leverages in 2002 and 2004 and freed up some reserves in 2014. The challenge in the last several years has been taking capital in SRF and finding a great place to receive appropriate reserves on investments within the state construct. The state construct is biased against risk. When you have a culture, like most state governments do, where you are worrying constantly, all of the incentives are aimed at eliminating risk and the entire structure of the SRF is the mirror image of that.

Lori Beary added that she was not sure they would invest in a venture fund but their regulators are hesitant to approve technology and the only way to help small communities is with new technology. She could see using a small portion to support new technologies the regulations say have not been tested in cold climates. That is their biggest hesitancy so they could have a small fund to test technology in northern climates to give the regulators comfort to approve the new technology.

Jim McGoff added that, through borrowers, they have tested technology but have not invested in a fund so to speak.

Mr. Sawyers said that, based on the eligibilities and investment in the SRF, it would be a state decision to engage in one of these projects. He added that he has seen the situations Ms. Beary and Mr. McGoff referenced but had not yet seen direct investments into a venture fund.

Mr. Rothstein asked to what extent there was coordination with associations in the development of the clearinghouse.

Ms. Abhold responded that they did reach out to the major water associations and NGOs during the Clearinghouse predevelopment and development phases. WFC also solicited content suggestions for the Clearinghouse. All of the Clearinghouse resources have to be free of charge. There are a lot of great reports out there that are not free. What is free is being added and they hope some of the associations will make additional content free so it can be added. They have over 600 resources in the resources database right now. If something is missing they will add it or work with the folks who produced it to get it added.

Ms. Throwe pointed out that the presentation had glossed over the term resiliency and clarified that, in the state of Maryland, they think using the word resilient is very important. She encouraged everyone to continue using the term, including when discussing resilient economies.

Ms. Daniel asked Ms. Abhold if the webinars were being recorded.

Ms. Abhold responded that the seven live webinars are not being recorded but that she will record a demonstration video after the webinars were completed. The feedback and questions asked by participants during the live webinars will be used to inform the recorded demonstration videos. She added that the Clearinghouse Contributor Portal does include demonstration videos.

Ms. Daniel added that she thinks SRF funds have the opportunity to use a social impact bond type model. She also reminded everyone that any use of SRF funds in risk will impact maximum funds so if states use the dollars for these other topics they might need more funding overall.

Mr. Gebhardt responded that any time the SRF incurs a loss it will impact future capacity, adding that these conversations should occur in that context. Mr. Gebhardt also added that use of available cash does not deprioritize the funding of projects on a state's Intended Use Plan ("IUP") so that something else can be prioritized. All cash remains on the IUP. The opportunity discussed is solely a function of an assessment of an SRF's available liquidity. If there is excess, it is asking the question as to what else can be done other than park excess cash in treasury bills.

Mr. Anderson said innovation comes from borrowers. You can work with utilities and other borrowers to find innovative uses of the capital to push SRF to structure deals within their legal mandate. That will drive innovation versus the SRF driving innovation which may be unreasonable.

Mr. Sawyers responded that it is happening but maybe not fully. There is a document that highlights innovative uses of SRF funding across the country and a few examples focus on new technologies.

Mr. Liu thanked everyone for a good discussion. He said the states are restricted on what they can do and a lot of the larger mature programs will have a capability to do this compared to mid or small size programs. He added that a lot of states don't leverage so that is also a challenge. As he thought about investment policies, and legal documents that govern how states issue bonds, it is typically a cut and paste of current state requirements. Any changes that may involve risk would have to be amended for state documents. The success of SRF is also based on investors and rate agencies are concerned about SRF credit strength. He concluded saying that it was a good discussion but there are still a lot of details to work out.

Mr. Gebhardt added that water innovation is an opt-in proposition. States will take the measure of what they can do and decide whether to opt-in. In terms of investors, they're talking about equity – not dollars – pledged directly to support credit so it probably wouldn't interfere here.

Mr. Liu responded that it would depend on the state program because some do pledge equity. He added that the information the Clearinghouse provides is excellent and it was good to see it come to fruition. He suggested everyone take a look and join the webinars if they could.

Ms. Abhold added that all of the EFAB reports had been added to the Clearinghouse.

Mr. Liu asked the EFC representatives to come up to provide an update on the EFCs.

Environmental Financing Trends, Challenges, And Emerging Innovations

Khris Dodson
Glenn Barnes

Khris Dodson, the associate director of the Region 2 Environmental Finance Center, and *Glenn Barnes*, the associate director of the Region 4 Environmental Finance Center, presented updates on behalf of their colleagues. They provided a document with updates from each region in the participant packets. Mr. Dodson asked the EFCs present to chime in if there was anything they wanted to add during his synopsis.

Region 1 – New England EFC

Mr. Dodson pointed out that the Region 1 EFC wanted to highlight their stormwater finance flowchart in the handout. One way the EFCs are integrated into EPA and the WFC is through the regional forums. The New England EFC co-hosted a stormwater finance forum in New Hampshire last year. The result of the forum was a set of tools, one of which is the stormwater finance flowchart.

Region 2 – Syracuse University

The Region 2 EFC is working with the New York State Department of Environmental Conservation and the New York State Homes and Community Renewal, USDA Community Development Block Grant and New York Sea Grant programs to work on resiliency funding for coastal communities in the Great Lakes. There has been a lot of flooding in recent years that is affecting shoreline communities. They are working with communities and state agencies to find funding and then, next year, they are going to provide training and technical assistance to those same communities. Often when there are emergency situations and extreme events the response is reactive but moving forward they are trying to be more forward thinking about preparing communities. The handout includes information on their work facilitating multi-stakeholder partnerships about floatables control and plastic-free waterways through watershed management and green infrastructure, particularly looking at using green infrastructure for pre-treatment in Puerto Rico and the New York/New Jersey harbor area. They are trying to attract attention to these issues of controlling plastics through videos and Public Service Announcements that get the information directly in front of users.

Region 3 – University of Maryland

Region 3 wanted to highlight their community resilience stress test financing tool. There is an infographic about the tool included in the handout. They are looking at the different sectors for where investment can take place including private investment firms, pension funds, philanthropy, banks and lenders, social impact investors, and the public sector. The tool looks at how to bundle projects on the ground to cross industries or sectors to enhance return on investment. The goal is, ultimately, to better target public and private capital to fund projects at the local level.

Region 4 – University of North Carolina (UNC)

Mr. Barnes provided the update for the EFC at UNC. He provided an update on the EFC's work putting together an analysis of customer assistance offerings which looked state-by-state to say whether it is currently legal for a water system to take money from one customer to offset bills for another customer. The short answer from their analysis is that it depends. It depends on the state and whether the water system is regulated by the Public Utility Commission (PUC). California is one example where if you are a governmental utility you are not allowed but if you are not regulated by a PUC you are essentially required to do so. The analysis is up on the EFC at UNC's website and will be included in the Water Finance Clearinghouse soon. They are working with many of the centers on how to support small drinking water systems. The question is how they can help very small systems be financially sustainable. The Office of Water at EPA puts out money to work with small water systems including money for technical capacity. The EFC has some funding for financing management and they are looking at a whole series of topics on financing and management including access to funding programs, rate setting, asset management, water loss reduction, energy management, leadership, decision making, and climate resiliency. In this project, the charge from EPA is to provide service to small water systems in every state and territory. There is someone from one of the EFCs on the ground in each state every year to provide assistance. They provide this assistance through tools as well as with e-learning. The EFC is also working with financial regulators to promote good management practices. They are currently in their 4th round of the project and have held events with about 13,000 workshop and webinar participants from small water systems, larger systems, state staff, and consultants. To date they have had 10,000 unique webinar participants. They are looking to provide support to the very small systems, those who may serve 30-50 people. They engage with these systems and provide them help on finance and management. They invite funders from SRF, USDA, and other groups to present and answer questions. They are looking at issues around regionalization and partnerships between systems. Mr. Barnes wanted to highlight something on the handout - their focus on large and small tribal communities and the unique challenges that they face. They have found that the EFCs are good at bean counting and outputs but they want to see how systems are using the information to improve. Next year they should be able to provide another update on this important national project. There is a great need to provide support for these systems since there are 150,000 water systems and almost all of them are small systems

Region 5 - Michigan Tech University

Mr. Dodson resumed with the rest of the EFC updates. The Region 5 EFC has a pilot program to better manage all infrastructure in Michigan. They are looking at how to apply asset management to other infrastructure beyond transportation so there can be a coordinated approach to managing infrastructure. They are also working on a Wisconsin water infrastructure initiative that looks at the drinking water section of the Department of Natural Resources (DNR) to bring about adoption of asset management. This project is also in a pilot stage, smaller than the Michigan project and is focused solely on water. They are working on this without legislature to illustrate how an appropriately setup asset management program will make meeting DNR requirements easier and will also streamline operations.

Region 6 – University of New Mexico

The Southwest EFC is working on a case study that shows a community struggling to meet a combined sewer overflow mandate where they could not afford the $350 million cost over 10 years to fix the problem. The community came up with innovative changes in managing the system to reduce the treatment system cost by $1 million in construction and $10,000 in operating costs with the same end goal. The EFC facilitated that conversation between EPA, the community and the state to find a mutually agreed-upon way forward so the utility could affordably meet the mandate.

Region 7 – Wichita State University

The Region 7 EFC is working with Kansas Department of Health and Environment to develop a program for chemical removal of phosphorous from wastewater. Communities are going to see lower phosphorous requirements and this will help those communities meet compliance. They are also working on a sustainable materials management project with Syracuse. They held some workshops engaging students to tackle some of the stormwater issues that the Region 7 EFC saw in their region. There is a small blurb on the stormwater optional VOP program, which was not an EFC project but it is a novel way to finance sediment reductions, which might be helpful to this group. The City of Wichita program is meant to allow for offsite Best Management Practices (BMP) to mitigate or offset onsite post-construction runoff. The project allows a developer to, instead of implementing onsite BMPs for sediment removal for stormwater, purchase $20/month in perpetuity for offsets. The money is given to upstream farmers to reduce their sediment which gives the city a bigger bang for the buck.

Region 9 – Sacramento State

The Region 9 EFC is working with communities to meet NPDES requirements. They have been identifying funding strategies, establishing a stormwater fee, and assessing communities' ability to pay for assessments. They also supported two of the EPA finance forums earlier this year.

Region 10 – Rural Community Assistance Corporation

The work the Rural Community Assistance Corporation is doing is very interesting because it allows you to see the resiliency theme throughout the EFCs. RCAC is working with communities in Alaska to create a decision matrix tool to answer the "what if we make this decision" question. Often the EFCs help communities with figuring out how to pay but what about what happens if they decide to move their homes or make another significant change to the community? What does that mean for the community and who pays? It will be an interesting project in Alaska. There are also working with Eastern Washington University to develop a smartphone data collector application which will help improve asset management.

The Region 8 EFC did not have update due to their relatively new status as an active EFC.

Discussion/Questions

Mr. Rothstein congratulated UNC on the work they completed removing barriers to customer assistance programs. One thing about the characterization of customer assistance programs as a way to use rate payer dollars to give money to some customers and not others is that it is central to how we think about the services. There is a business case for compassion. It isn't about giving money from one customer to another it is about protecting public health, providing universal services, and community responsibility. The industry works hard to try to line out the costs associated with water shutoffs and improving collection policies. They have built a business case for us all being better off if people have universal access to service. He cautioned that they should be careful about the characterization of these programs because it could put the sector in a box that could be difficult to get out of from a legal context. If they don't redefine that they are more about protecting public health and less about moving water through meters they won't get where they want to be.

Mr. Barnes responded that the ideas are out there. It is an interesting question because, from the legal framework, they have to go in a direction where they don't want to frame it. They have talked to a lot of systems that say if someone doesn't pay, we shut them off and then turn them on and charge them a fee. Often the fee doesn't meet the cost of shutting them off and then back on. A lot of private companies have shareholders expecting return on investment and they can see the investment portion of fixing that issue.

Ms. Throwe asked a question of all of the EFCs. She wanted to know, looking at emerging trends, what they were seeing as a unique or new challenge. She followed up saying that in the afternoon they would discuss new charges that they can explore for new charges by working with EPA.

Mr. Barnes said one thing they hear concern about from utilities and local government is the phrase "the silver tsunami." A lot of people talk about the retiring workforce and knowledge going out the door with them. There aren't a lot of younger people excited about working in water and wastewater. He shared that he isn't sure, from the EFAB's perspective, what the financial hook is with better money for training or opportunities for debt forgiveness for public sector jobs. The issues around having a strong workforce and knowledge management are a big deal. There is a major financial cost when an operator leaves a system after 25 years and takes their knowledge with them, in addition to a public health risk.

Mr. Hughes added that another trend the EFC at UNC is seeing is the demographic changes and aging of customers in certain parts of the country. Talking about credit worthiness, if you look at what will happen to systems in rural areas if the number of households who can pay goes down, you can't see who will pay back the loan for some of the projects. He doesn't know the answer but recognized that there is an issue with infrastructure going into shrinking communities that may not have a population that can pay it back.

Mr. Dodson added that they define resiliency not just in terms of climate change but also as financial and social resiliency. When they look at aging communities with no one coming in to pay in the future, what does that mean? That would be an interesting charge to take on.

Mr. Chow added that workforce development and assistance programs are dear to his heart, having faced both challenges in Baltimore. They have a water assistance program and 40% of the population is below the poverty line. The city continues to raise rates because they have to. This is the third year of the mentorship program in Baltimore. There is a large population of unemployed young people in Baltimore and many utilities are losing institutional knowledge due to a retiring workforce. The sector is also not doing enough to encourage or promote their line of business. The mentorship program recruits 15-16 high school graduates (ages 18-24) per year to be enrolled in the program. They have been talking to Water Environment Federation and others about promoting the program elsewhere. San Francisco already has a similar program. They are all facing the same challenge and they have to do a better job introducing their line of work and jobs and enticing folks to join.

Mr. Barnes asked what the draw is for younger people to get involved. He asked if the incentive is typically the stable income, a job in a technical field, public health, or another reason.

Mr. Chow responded that at first it is a stable income and then that the job is recession proof. People may use less water but the service will always be there. That is a draw for younger people. Many are living on a small unsustainable paycheck so getting a job with a career is powerful and it shows that they can climb the ladder. Most of the folks need to see a clear vision of that career and the opportunities.

Ms. Roberts De La Parra agreed with Mr. Chow sharing that they are working to get approval for workforce development for a Department of Labor program to engage women to become leaders in stormwater management and finance in the water industry. When dealing with millennials they develop strategies to see how they're thinking. First, they have to know that the opportunities exist. Most don't see how water is connected to their lives. Second, multi-cultural millennials want to be entrepreneurs. They aren't looking at a job but instead at building wealth. If we approach it like that, they take a different perspective. She said this approach shows them how they can create economic stability long-term and how it connections them, their communities, and their families.

Martha Sheils said that they were drafting a charge from the EFC to address pre vs. post disaster resiliency relief. Looking at financing for natural infrastructure and built green infrastructure versus retreating or hard engineering solutions. There is strong data about protecting natural infrastructure to address disaster concerns and how it is more cost effective to address concerns, like flooding, pre-disaster. Issuing green bonds and working with green banks to promote green infrastructure could be beneficial. The charge has not been drafted yet, it is just an idea, but it might be a good new charge for the Board.

Mr. Shapiro responded that they could discuss it as an option during the afternoon session.

City Of Wichita and Spirit Aerosystems Water Conservation / Reuse Plan Project

Rebecca Lewis

After a break Mr. Shapiro called the meeting back to order at 11:10 am. He introduced guest speaker *Rebecca Lewis*, the City of Wichita Wastewater Division Manager in the Public Works & Utilities Department. Ms. Lewis oversees the operations of wastewater treatment plants and has worked for the city for 27 years.

Ms. Lewis said she was honored to be here listening to the conversations. She shared that, as a boots on the ground type of person, she grew up in water and wastewater industry from the lab, to moving up and around the utility, and now as manager of the district.

Wichita has had a water recycling program in place for several years. These projects are typically initiated with the goal of conservation in homes and businesses, but they hadn't done an industrial water reuse project. They initiated one with their business partner Spirit Aerosystems in 2009. Many years ago there was a groundwater contamination area in the city. The Coleman factory in the industrial area of town had trichloroethylene contamination. They developed a strategy to pump the contaminated groundwater back to the drinking plant for treatment but there was a lot of pushback so they ended up not moving forward with it. Spirit pumps about 1MGD to the river making it no longer available for the drinking water plant. There were a lot of trust issues as well because government provides the source and consumers don't have the buy-in or control over the decision.

When talking about reuse, the least acceptable is direct reuse for drinking water. They have two reuse sites, which include a smaller plant that discharges into a fishing pond recreational area and the Spirit project. They focused on Spirit because of the 2008 drought in Kansas. The Metro Chamber Water Task Force developed several long-term supply strategies, one of which was to partner with large industry to develop reuse. Spirit is the largest industry in Wichita. They are the largest water user and employer in the city and they have had a zero discharge facility since 1998 with over 7 billion gallons recycled. Their domestic supply goes to the wastewater system and is recycled through their reverse osmosis system. In 2009 they had a good business plan and approached the city about reuse but the city was not ready. The city was concerned about losing a revenue source because Spirit purchased their potable water through Wichita. The idea came back around when the major reservoir was limited and they approved two sources, the Gilbert Mosley Wellfield and the Lower Arkansas WQRF Plant 2.

In 2011, they decided to go forward with the project. They conducted an analysis to determine the routing options, costs, and pipe needs. Spirit said they wanted a 70% reduction in potable water and that they would provide the capital and operating costs against conservation so they can save the water for times of drought. They operated the system under their NPDES permit and Spirit's rates and other customer rates weren't impacted. Spirit is committed to buying a certain portion every year which was part of the negotiation. Their rates cut O&M and rehab costs. Future rate increases are tied to the consumer price index, there is a take or pay provision, and they offset revenue loss with conservation budget. It was a win-win, cost-effective way to approach conservation thanks to the many benefits to the utility and its customers.

The initial concept was to use existing easements and pipelines. They minimized conflicts by crossing the river adjacent to city plant site. They installed the wet well and then slide gates, pumps, purple pipe, and hypochlorite disinfection system. It has been fairly effective and does a good job because they're not disinfecting the water but inhibiting algal blooms.

Ms. Lewis also shared some information about the purple reuse piping. It was developed by an engineer in California who loved Willy Wonka so he decided it would be the same color as when Violet Beauregard licked the blueberry wallpaper. It had to be a different color, so that's how the industry ended up with lavender pipes. The Spirit pump station goes through microfilters, then the water goes to cooling towers, and then is used in the plaguing processes. They started talking in 2008 and 2009. It is just starting operation now. Their second wastewater treatment facility had an issue with phosphorus impacting their treatment towers. They asked the plant to treat phosphorous in the Wichita facility to improve that. Everything else has worked well and there is electronic communication between the facilities. They have had a great partner at Spirit with a good design engineer, contractors, and consultants that have supported the project. She concluded that the project is going well and presents a good utility/industry partnership.

Discussion/Questions

Mr. Hughes asked if, from a revenue standpoint, they shut down their conservation program after the Spirit project started. Ms. Lewis responded that they still have the program. They were rebating at $1 million a year but are now at $100,000.

Mr. Kaplan added that they provide wholesale treatment for King County and have had some issue when they offer recycling because they become competitors with the treated water from the local utilities.

Ms. Lewis responded that they are a combined water and wastewater utility. Their wastewater customers are all Wichita customers so they really aren't in competition with providers.

Mr. Kaplan asked how the phosphorous removal was being handled.

Ms. Lewis explained that they negotiated a $4 million price and have about $700,000 left to use to try to address it with the corporation. She added that Spirit has also committed more money if necessary.

Ms. Throwe said that on the east coast there is not as much water reuse. In Maryland, they are talking about it more now and are looking at areas on the Eastern Shore. Wichita was successful at partnering and that helped move this forward. She asked how states move forward without this type partner and if Wichita would have been able to move forward without Spirit on board.

Ms. Lewis responded that she didn't think that it would have. It was a lot of marketing to get people to think about what happens if you turn on the faucet and no water comes out. They haven't been marketing themselves but Spirit took it on and worked with them. She emphasized that the partnership was key but marketing the importance of water and what needs to happen for partnerships to occur is also important. She added that water rights are a whole other issue because of long term farmers.

Report Out: Financing Failing Decentralized Wastewater Systems

Tom Liu

Mr. Shapiro introduced Mr. Liu to provide the report out.

Mr. Liu directed everyone to the report in their participant folders. In February they received a charge from the Office of Water to look at decentralized wastewater systems. The two major questions they were charged with were: 1) Can co-funding arrangements and credit mechanisms be designed that can distribute risk among participants such that more robust and sustainable mechanisms can be developed that might involve a cross section of public, private, and/or not for profit entities? 2) Consistent with establishing a dedicated revenue stream for CWSRF loans, as required by the CWA, are there minimum credit standards that can be identified that would allow SRFs to expand lending activities for such projects? In conjunction with, or in the absence of, other funding resources?

The workgroup took it upon themselves to provide background information as well. The report involves two parts. In the first part they analyzed existing funding programs. This included a review of a survey conducted by the Council of Infrastructure Financing

Authorities (CIFA), a review of existing programs, and a discussion of direct and indirect financing programs. CIFA sent the survey out to their members to ask about programs and details of what they have within their states for decentralized systems. Unfortunately, they only had a limited response because they were doing outreach early. Some SRF programs did say that they could strive to populate it more and provide more information later. Based on experiences of the workgroup members, they looked at Maryland's Bay Restoration Fund Program, Massachusetts' Title 5 program, and the Maine repair and replacement program. They wanted to provide details about what is available. They also acknowledged the work WIRFC did and then looked at findings and ideas. A lot of what they talked about was looking at grant and low cost loan programs. That is important but they also wanted to include additional ideas. There are not a lot of magic solutions. They also wanted to take a look at obstacles mentioned, centering on loan programs and the fact that there are co-funding opportunities. Mr. Liu said that they recognize everyone is looking for grant money so they tried to introduce co-funding and setting up loan programs as well. They also recognized that not all of their recommendations are mutually exclusive or will work for all states. When it comes to implementation, it is important to have infrastructure in place for administration, management, and costs and they may not have the personnel or costs to reasonably do it.

Mr. Liu continued his report out sharing the workgroup's ideas. They realized that with SRF programs that leverage, they have tax rules and that this isn't an easy topic. They talked about the tax challenges and restrictions in the report. The information is meant to give insights and provide examples of how other states have done it. The workgroup addressed some of the tax concerns for tax-exempt financing. They also talked about tax-exempt financing which can help them get to a lower cost of funds. When you do taxable financing it becomes easier. In the current market the cost differential from tax-exempt financing is minimal. If the differential isn't that great, then may be more advantageous to consider taxable financing and avoid transactions costs related to federal tax matters entirely. We also understand that with most public financings, an entity will need to hire lawyers, bankers and financial advisors and a lot of the states won't have the ability or desire to do that. The federal CWSRF program has set asides such as 4% for administration. From the SRF program perspective, a lot of the costs were used to start up the SRF program. For some states there may be an opportunity to take all or apportion of the 4% and use it for direct loans for septic systems. Any money that goes out as loans comes back as payment and can be reused. That is a pretty straightforward concept. Also, just because a state decides to take the 4% for decentralized loans today doesn't mean that they have to continue doing that long-term. When they meet funding targets they can repurpose those funds, including the administrative set aside.

Next, the workgroup stepped back to look at SRF leveraging models which have been proven. The question is how to move the leveraging concept forward. This idea is used in business because the needs are there. However, states can also setup general pool funding programs. This can expand the funding capacity of the SRF or provide funding to the water sector overall. Given the SRF success, they can take advantage to do something in addition to the SRF but with a similar structure. He explained that Jeff Walker, in Texas, has done this and others have also been thinking about it. It is fairly new but increased funding capacity can be achieved.

The workgroup also looked at Property Assessed Clean Energy (PACE) loans and introducing them for septic systems. They think it works as a tax lien structure which has shown success throughout the U.S. PACE is included in the report, but there is a cautionary note. A Senate bill was proposed in April that would kill PACE financing throughout the U.S. Nothing has been done yet, but there is a responsibility to look at that and make sure there is no movement before they finalize the report. There was also a Wall Street Journal article the week before the meeting that talked about PACE loan default rates possibly going up. They will include this information in the report.

The workgroup also looked at linked deposit loan programs, which are currently used for different purposes. It is a straightforward concept where an entity would take excess money and deposit it with participating banks, earning a rate of return that is less than the market rate. Then the bank would use the money to loan funds to households for septic systems at less than market rate. The advantage is it provides funding capacity and it is a proven structure. From the administrative side, the idea is to offload the loan servicing to the banks so it is easier to administer for the entity. When the workgroup looked at this option, it was not clear how many banks would be interested, but it appears there are plenty of banks doing this for community service purposes.

Finally, the report includes a write-up on a subsidized warranty program approach. These would be warranty programs for septic lines or tanks. Not a lot of systems are doing this overall. There are only two large national companies providing this work for homeowners. There is concern about affordability but this could be a good co-funding opportunity to take low cost loan or grant money to provide funding. To make this the industry needs more data and needs to address the maintenance issue. This is a new concept that could present a viable opportunity.

Mr. Liu finished their report out saying that they hope some of their recommendations can help address some concerns about decentralized systems. There are a lot of viewpoints on this issue. They wanted to open up the discussion, help address some obstacles and introduce new ideas. They will be asking the Board for approval to move forward with finalizing the report. They want to make a few additions to the report but are basically ready for approval.

Discussion/Questions

Ms. Cupit asked if they had received any additional responses beyond the first three.

Mr. Liu responded that they only received input from three. They included a link and contact information in the report.

Mr. Meister said that he reviewed the language from the decentralized water report and what was carried over to the lead report. He shared that he thought it was a good product but there were some loose ends. He was in the working group meeting the day before and didn't think the loose ends rose to the level of board consideration He recommended the report for approval.

Mr. Sawyers said he thought there was a lot of value associated with this report and a decentralized program within the Board's portfolio. He said having ways to implement or recommend some of the ideas, like the warranty program, would add to the report. He asked how the state would pay for program operation if they forgo the 4% admin set aside for operating their program.

Mr. Liu said they recognize programs do still have those costs. They could use the 4% set asides for loans and then set up a loan origination fee and/or an ongoing servicing fee. They may not get the money back right away but, if the desire is to have money right away, an upfront loan origination fee can.

Mr. Sawyers added that the 4% is often used for a bunch of services for the program.

Mr. Liu responded that, if the priority is that they really do need that money for administration, this may not work for them. Also they are not advocating that they use the entire 4%.

Mr. Sawyers asked, for a pooled financing program, if the SRF would guarantee the bond itself.

Mr. Liu said water credits and loans are highly valued and highly rated. They are taking advantage of the fact that they do not need a guarantee. There does need to be an anchor credit but an entity can get a rating at a fairly high level if it is structured right. This is essentially a market rate loan program. The appeal to the individuals and community is the cost of funds for this program is typically lower than their alternatives because of the program's relatively high rating

Ms. Daniel asked what the seed capital was.

Mr. Liu responded that there was no seed capital. It relies on the diversity of borrowers, water credits, and the structure of how you set it up. The structure is similar to the SRF program. It has the same management and carries weight for ratings.

Ms. Daniel asked if the scores homogenize the credit.

Mr. Liu's response was that they're saying the diversity of the pools avoids that. They do need a certain number of borrowers to make it work and the anchor credit needs to be a high rated credit.

Ms. Daniel then asked if one defaults, if it all defaults.

Mr. Liu said that a lot of programs have back-ups and the group did talk about having money available that will help with the credit support issue up front and the security of the transaction.

Mr. Sawyers said he liked the idea but was still trying to figure out the type of borrowers. With decentralized system owners there might be a credit issue. He thought there was a need for some seed capital since they will be repaying the bond, but he could not see the initial credit being good enough.

Mr. Liu said they could have the municipality serve as a backstop. The municipality would gather the loans and attach their pledge to the loans.

Mr. Sawyers responded that there is an opportunity to figure out another method, beyond equity, if there is a bond issued. Thinking specifically, perhaps the SRF could somehow guarantee or provide seed capital.

Mr. Liu said that they did talk about that in the workgroup. A state program like the New York State Energy Research and Development Authority (NYSERDA) could guarantee the program; they will put that in the report.

Mr. Arndt provided some real-world examples of how this works. Pennsylvania created the Commonwealth Financing Authority a few years ago. The agency issued bonds available to municipalities throughout the state for water finance and other purposes. They did what Mr. Liu is suggesting by pooling borrowers. There are a couple of other attributes since the municipalities have some level of state aid, and the state has money to show the bond market if the municipality defaulted. At a later date, the state also allocated funds form the Marcellus Shale gas drilling fee to this authority so there was a second source of capital beyond the bond. The program isn't consistent and it varies from bond issue to bond issue and the other aspect of the authority. It has a lot more political strings for how the money can get allocated through the governor's office. The approach is much more objective and criteria-driven compared to the SRF.

Mr. Sawyers said it is a great idea but the details will be important.

Mr. Liu told the group that they didn't want to say they needed to put in a gas or sales tax to do it but that they could say, to the extent additional credit is needed, to look at additional credit sources which the workgroup will include in the report.

Mr. Gebhardt pointed out that they do need some degree of homogenization to get to a credit determination.

Mr. Liu responded that they will include a discussion on credit support.

Ms. Daniel supplemented the point to say that she has seen pooled financing as long as there is seed capital and credit support. There was a state intercept in Tennessee schools. It gets difficult to show the coverage each entity has. The SRF guarantee is fascinating. In the report they reference the fact that there are additional credit or seed money issues vetted through the state.

Mr. Holland pointed out that this report is very important work. There is a team in Long Island working on this issue too. They can learn a lot from the energy efficiency space. This report says it rests on the presumptions that people act in their self-interest. That isn't always the case, absent some form of obligation on the part of a local municipality. The NYSERDA example is a good one. The SRF authority was an energy efficiency program and SRF decided that energy efficiency did impact surface water supply. The multi-family performance program underpinned the loan pool and it is successful because local laws in New York State require people to get below a certain energy efficiency level. Project management and engineering firms go door to door and tell them they will do an energy audit for free, provide measures with 18 month payback periods, and facilitate the application to NYSERDA. The conclusion is, instead of tailoring to the homeowner, they tailor to contractors who are incentivized to do projects. They may have the balance sheets or be more comfortable taking on debt than homeowners. The other piece is the stick. Absent the stick of having to get septic systems under compliance it is unlikely you get the uptick necessary. Instead, you end up standing up a program that may not be widely adopted.

Mr. Liu pointed out that Mr. Holland got at the regulatory and political issues. The workgroup wanted to steer clear of that and stick to the financing issues. They, however, are good points.

Mr. Meister said they would add a line referencing the importance of encouraging state and local participation, through intercept or foundation. He asked if that would get to the heart of the concerns.

Mr. Liu added that it would be added in the credit support discussion.

Ms. Downs wanted to note that the charge was to provide replacement of existing systems, to provide some programs that would offer that. She pointed out that while this was a good discussion, it was not part of their charge.

Mr. Arndt brought up the direction of subsidized programs. Legislation in the Pennsylvania Sewage Facilities Act directs every municipality to develop a wastewater management plan that covers centralized and decentralized wastewater disposal. One component, added years ago in the case of decentralized systems, was that the municipal plan had to include a management plan with oversight of that service. The way it unfolded was that most plans have trended towards putting the burden on property owners as far as reporting requirements for testing and turning in paperwork. Some municipalities have contracted with private entities for cleaning and management. On the other extreme, in some cases, a municipality has delegated the responsibility to an entity with centralized support. They have expertise in that area and can take on the responsibilities on behalf of the municipalities and could bring financing to the table. It could be used in addition to what is here. Not sure other states have those programs but it is something that could be an option for those who don't.

Theodore Chapman addressed some of the questions brought up by other participants. From rating agencies, the programs are highly rated and it is something that has been proven. From their standpoint says diversity of the pool size has to be more than 10 communities across the state. Everything else would be in the details. It would be similar to what we ask of any existing program: the same sub lien, back stop, pre or post default. It won't be as "swirly" as a non-essential service. It is an essential service and SRF eligible so it should be easy to explain to the rating agencies.

Mr. Sawyers asked about the timeline for finalizing the report.

Mr. Liu shared that they want to go through and make some additions to the report. They will add to the credit support discussion to address what was discussed at the meeting. They will add a reference to default rates for PACE loans and look at the senate bill to provide up to date information on the PACE bill. They will also make reference to the NYSERDA loan, adding two expert consultants. They will have changes made in the next week or so and will draft a short transmittal letter. The workgroup's recommendation is to get Board approval of the report with the additions.

Ms. Bowie added that *Pamela Scott* is the staff lead for the report. After revisions, she will email it out with the transmittal. She said, if the Board wanted to concur today, with these comments, they would have concurrence.

Mr. Shapiro pointed out that prospective members did not have a vote at the meeting. He said, based on the general nodding of people voting, that they would vote with the understanding that some additions would be made.

Ms. Bowie pointed out that papers had been handed out and explained that signed papers should be passed back to the front as people finish. The forms were passed to the front of the room and votes will be tabulated over lunch.

Mr. Liu thanked everyone, particularly the workgroup members.

Mr. Shapiro thanked the workgroup for a great, readable report. The group planned to reconvene at 1:30 pm to continue the agenda.

Report Out: Financing Lead Risk Reduction

Joanne Throwe

The Board reconvened for the afternoon session at 1:37 pm.

Mr. Shapiro opened the session stating that they were on the home stretch and would finish the report outs and discuss potential new project proposals. He also shared that they had tabulated the voting results for the decentralized report. He turned the floor over to Ms. Throwe who provided the financing lead and risk reduction report out.

Ms. Throwe thanked the Board for the opportunity to give an update on the financing lead risk reduction report. She also thanked the workgroup, especially her co-chairs. The report is not done yet but is about 90% completed. They are getting final comments back based on their group discussion yesterday. Comments are due back September 11th. From September 15th-18th they would clean up the comments and by the 18th EFAB members could expect to receive a draft. She hoped that they would be able to lend support and approval at that time. They were aiming for approval by the end of EPA's fiscal year on September 30th.

She shared that the report has several EPA offices as client and that they still needed to touch base with *Alecia Crichlow* to see if they were comfortable with the recommendations since there are several offices involved and it is a difficult and complex issue.

Ms. Throwe summarized the main charge which was to identify and recommend options to improve infrastructure through innovative finance, to identify tools to finance projects, to review the effectiveness of existing funding options, to identify gaps and barriers, and to look at new approaches for financing. They started by framing the issue. The issue of lead is complex and they could have gone various avenues from dust, soil, products, etc. They chose to focus on two main issues: lead paint and lead service lines.

Ms. Throwe shared the constraints and barriers for addressing lead paint. One big one is the differences amongst states. They found there is no consistency in how states manage lead paint. There could be many states who think the lead paint issue is a resolved issue, but that is not the case. Many states and the Centers for Disease Control and Prevention say that until there are zero cases of lead poisoning, the issue is not resolved. Lead paint needs better education. That is obviously not a financing issue, but it goes hand in hand with their financing recommendation. There needs to be better coordination from the states and that is something that think EPA could help take the lead on. They also need to take a look at targeted testing. Some lead testing is done in infants and children but it is not consistent and there is often no follow through on the test from pediatricians or other testers.

Ms. Throwe then provided background on lead service lines. They were well aware of this issue because it became heightened because of Flint, but the issue had been present before. Full replacement, not partial replacement, of lead service lines is the most import thing to advocate. Corrosion control measures are also available and often used. The biggest problem is that full replacement is expensive. Cities may not know where all of their pipes are located. Geographic Information Systems (GIS) has helped a lot but it doesn't always include information on the condition and location of every pipe. That is an asset management issue and they want to push for asset management from a lead control perspective. The other issue with lead service lines is that there is a disconnect where the utility ownership ends and the homeowner responsibility begins. It comes back to what we have talked about before - the willingness or ability to pay.

The workgroup was asked to look at effective existing funding, gaps, and barriers. There is no one option that will work. What they found is that there needs to be a portfolio of solutions. Lead contamination is geographically dispersed. The situation with lead is more of a Superfund-type problem. It is going to be challenging to get over the hump of getting utilities to replace all of their lines because of the homeownership issue. Replacing partial lines is not as good as total replacement and can even be worse in the short term because it could dislodge lead particles.

She added that the workgroup wanted to be able to take part of the report to be a "what funding is existing" guide. They did a representative, not comprehensive, review of options. They also have case studies and have tried to pull case studies from different regions to show compelling stories of good (and sometimes not so good) examples. She shared that the workgroup found there are federal and state programs that do exist that can provide funding. Grant funding is limited and doesn't go as far as they would want. Housing and Urban Development (HUD) and the USDA community development and building grants are already well widely used. Another source that is available but not as well used is the DWSRF. There is an opportunity there to push forward tax credits, bonds, and other incentives used around the country. These are all mentioned throughout the report.

One more pitch that they want to move forward on is financing lead as a resiliency initiative. It fits in a way that they can start moving communities toward broader infrastructure investments. Typically we silo lead by having pools of funding and financing for lead but not for a more holistic push to integrate community benefits like when hospitals and schools are replaced. They could achieve multiple economic, social, and environmental benefits if they started including lead in the resiliency approach and if there was an integrated approach with integrated planning.

She also pointed out the connection to public health. There is a need to make a stronger connection for communities and financing to tie infrastructure investment and community assets to creating an investment-ready portfolio shaped around public health. They could leverage Medicare, Medicaid, and energy improvement to tie it all to lead. She added that Mr. Nees and Ms. Sullivan will continue to work with the group to open up recommendations, observations, and opportunities. The workgroup will add a conclusion once these pieces are flushed out. She then turned the presentation over to Chris Meister.

Mr. Meister seconded Ms. Throwe's thanks to the committee members. He added that a big portion of the report was prepared by Mr. Liu. That section highlights the utility of some of the portfolio of tools that was carried from the decentralized report into this report. Even though there is a lot of discussion about the SRFs, there is a desire to broaden beyond the SRFs. It is important to continue to emphasize that point because there are at least 12 states that do not leverage. Even states with sophisticated programs can continue to learn and make the policy and financial rationale for the SRFs crisp and comprehensible to policy makers. One area of opportunity that they identified was expanding the SRF for drinking water into lead mitigation. That is discussed in the report. It is similar to the decentralized sewer issue in that there is a discussion of pooled loan structures outside the SRF and they also cover a lot of challenges and opportunities with that approach. He pointed out that may of the positive aspects and challenges discussed in the morning session also rang true for this application. They have an essential public service and diversity of credit so if there is a way to sum the challenge of equity infusion in the SRF context through federal capital grants, they could be on our their way. He also mentioned PACE funding and that one challenge is accessing private residences. Private ownership comes with state constitutional legal bars and federal FHA mortgage constrictions and a variety of consumer exposures. To tackle PACE in the lead context they would still have an element of consumer risk and regulation.

They also talked about link deposit programs that states have used in the past. Until interest rates widen, a link deposit program is a tool with limited utility. The report then moves into a couple of other opportunities that were not covered in depth in the decentralized report. There is an opportunity to broaden the base into developing area of impact such as green or environmental investment. This could be as debt or equity and could be taxable or tax exempt. They discussed the pluses and minuses in the SRF world and some members had concerns with the green bonds but saw it more broadly as a developing concept in the market. Some expectation of investors is that in order to have an impact they may be willing to accept a lower rate of return in lead mitigation. Pages 19 and 20 in addition to appendices A and B include a lot of information that came out of their discussions about a matrix of innovative funding. They hope it is an effective and useful chart.

An infrastructure trust is a tool, well known in Chicago and other areas across the country and world, that is discussed in the report. It is still a developing opportunity, like green and impact bonds but it bleeds over into challenges that the P3 workgroup has discussed. There is potential for a support tool that could help but one has not yet been developed. The group recognized and taking care to understand the limitations of the EFAB and the charge itself. There are pronounced economic development, job creation, skills, and other benefits in the lead mitigation removal certification program coming through EPA. That is an important grant funding component to be highlighted in the report. Ms. Roberts De La Parra is examining that component and hopes to include the results of her examination in the report appendices.

During the discussion Mr. Anderson and Mr. Arndt also brought up the element of state-based regulations at the time of transfer. That is important because it dictates who ends up with responsibility to mitigate and eliminate lead.

Ms. Throwe wanted to drive home one point on the issue of lead safe certification. Using Maryland as an example, she said, when EPA cuts back lead safe certifications for contractors, if that is the direction they want to go, Maryland can take the lead and run that program but not every state has that authority or the willingness to move that program forward. She emphasized that it is an important program and they highly recommend EPA continue to fund and run the program. They cannot assume all states would take that authority on. To the extent lead financing and funding programs exist, EPA can put much of this information out there for the states through the Water Finance Clearinghouse.

Discussion/Questions

Ms. Downs directed the group's attention to appendix A. She said, looking under federal programs, they are not always sure which are eligible for private residences. They're not sure which differentiate and how.

Ms. Throwe responded that they found many of the programs who don't specify single or multi-family housing would be for the municipalities specifically.

Ms. Cupit added that most of the programs go to the municipalities and then they distribute the funds to families. The city or entity would run the program and then give funding to the homeowners.

Ms. Throwe explained that page 26 of the report provides that information. She added that there is also an opportunity to finance lead projects when it comes to energy programs.

Ms. Downs asked if the workgroup found a disconnect between HUD multi-family and enforcement of requirements. Some multi-family projects are financed with HUD money but she wasn't sure if they had come across actual enforcement of regulations that already exist tied to the funding they initially received.

Ms. Cupit said when dealing with homeowners, they allow them to rent the homes despite HUD funding being allowed. They can have tenants in the home even if the space is not in compliance.

Ms. Throwe added that some programs have limited capacity and resources. They recognize there may have a problem that they don't even know about. It does depend state to state but they found that EPA enforcement of state programs isn't typically what is happening.

Ms. Downs shared that DC has a slightly different issue. They have multiple programs coordinated with DC Water but the funding is available in other places. She asked if there was a conversation about encouraging utilities to look for other funding or rebate options. There are options but they're not coordinated. The 2-1-1 number will offer a direct answer but only for a specific questions.

Ms. Throwe responded that they found if you are a low income household or non-English speaker you may not know what is available or even that there is a problem. They need better coordination state to state. It is vital for someone to make a one stop shop. Even with the program for DC to retrofit pipes, the coordination is still lacking.

Mr. Meister highlighted the recommendation and opportunities that are to be written in the conclusion. He said they would explain that there are individuals and more sophisticated entities in cities that are tied to the goal of solving all of the problems at once because if they're done piece meal you get into more risk than you mitigated. He said they would suggest to USEPA that the clearinghouse tool can be useful for that purpose.

Mr. Hughes drew a connection between this issue and the project Mr. Barnes had discussed on customer assistance. A lot of states can see the two intertwined but some states have strict rules about using rate revenue from one to benefit another. It is a shame that is an issue in many states and it does cause some utility council heartburn. He added that they mention the Wisconsin model in the report. A program in Madison wanted to use general rate revenue to support a change out program and it was legally challenged by the public service commission. They had to clarify they were using a portion of revenue from rental sale, not the general revenue. That overlays a lot of the recommendation in the report. If money is coming from these sources that passes through rate utility, unless the utility is just connecting the customer with a financing sources, they may end up with a complicated issue. This is still an issue the states are trying to clarify and there may be another opportunity to clarify the legality of having a utility fund program for a subset of customers while also clarifying a customer assistance program.

Ms. Cupit added that the appendix, for the funding piece, is really just information. She directed people back to the clearinghouse and reminded them all of the EFAB papers were on the site. Once the report is finalized it will go to the WFC database and they can direct people there.

Mr. Kaplan shared that reading through the paper convinced him that lead service lines and lead paint are very serious problems. One encouraging part was when it said that, when high levels of lead are found, filters can reduce exposure but it is only a temporary solution. He asked if there are programs to finance installation of filters in community homes and if these programs are successful. He followed up that question asking if, in the lead program and decentralized systems, whether the SRF is being asked to provide financing. If not, are there barriers at the federal, state, or local level preventing SRFs from providing financing in these areas? He directed the question to Mr. Meister to respond about his experience in Illinois.

Mr. Meister responded that recently there has been Illinois legislation but leveraging the Illinois SRF is a fairly new development. 2016 was the first time they borrowed for new money against SRF loans since 2004. It underscores the initial point that there are a number of states with sophisticated, long standing SRF programs but the challenge is getting the concept across to those states that are not fully taking advantage of that tool. It is a two-step process, so you have to get to the point where you leverage and deploy the bond proceeds. Then you can think about what else you could do with the tool. In Illinois they're not there yet, but they have made a lot of progress on the first step since 2013.

Mr. Kaplan asked if their leveraging provided additional resources for programs. Is it that there are no impediments from taking existing resources for those programs?

Mr. Meister responded that, in the state context, unless the policy maker is familiar with the credit, they will think that debt is bad and they won't know how to staff the program. Again, they want to move away from this group being predominantly focused on the SRF but there are 10-12 states that are not fully taking advantage of the program. He added that they need to take some pains to describe the power of the program simply because it is counterintuitive to policy makers.

Mr. Arndt said that he believed there were state-specific restrictions that might limit state or federally appropriations, or federal funds because of a policy. For example, the SRF cannot be used for privately owned facilities in Pennsylvania.

Mr. Kaplan explained that water filtration systems are their financing mechanisms to distribute remedies.

Ms. Throwe said they did not see specific targeted financing for filtration. It was in a couple of cities and states as a short term balance for problems but only as a short term solution.

Mr. Shapiro shared that he thought the SRF could be used in an emergency for a short term cause but that they still need to worry about maintaining and replacing them.

Mr. Mehan commented on how substantive the report is. He added that it will be a great resource for states and utilities. He shared a couple of minor comments. First, he endorsed flagging the rate issue. Each state is looking at this to see if they can use rates to support this effort and it will be a state by state decision. He also pointed out the listing of corrosion control as a temporary solution or fix. He suggested that they revise that language as corrosion control is not temporary. When they recommend removing lead service lines they're talking 30-40 years. This will be a generational challenge. Even if you get them all out, there is still a lot of lead in premise plumbing. There are places without lead service lines that still get lead in their drinking water. Corrosion control will be with the industry until the residential stock turns over entirely. He added that it would be wise to make that point clear.

Ms. Throwe responded that some of the research they found said that corrosion inhibitors lead to holes in the pipes causing leakage. Do they explain that it could be a problem? People may not replace pipes and just use corrosion control measures.

Mr. Mehan clarified that corrosion control was not optional as it was law. Every community that has issues has to use corrosion control.

Mr. Shapiro suggested that the workgroup reach out to the Office of Ground Water and Drinking Water because proper corrosion control may not lead to those end points Ms. Throwe mentioned. He cautioned them to be careful about asserting that something communities are required to do can be damaging. Certainly, if it is not done right there can be problems, but it may be that the kinds of issues you're raising have already been addressed.

Mr. Mehan added that he didn't see it in the report but there is a major effort underway with the lead service line replacement collaborative. They would benefit from the document but they should also be familiar with that collaboration in this report.

Mr. Chow clarified that the studies were referencing pin holes.

Mr. Walker provided his state perspective saying that Texas found they could not loan to homeowners. The state administrator's lawyers say there is liability. If you oversee the program and fund disposal effort the Board could be liable.

Ms. Throwe said they would get the report to the full board for review on September 18th. She added that the workgroup had a question about the new lead charge and whether they had covered as much as they could.

Mr. Shapiro explained that would now move into new project proposals, starting with the Chesapeake Bay charge. He introduced Julie Winters and Dr. Eliot Campbell.

New EFAB Project – Region 3: Chesapeake Bay – Identifying Metrics of Success

Julie Winters
Dr. Elliott Campbell

Julie Winters thanked the Board for inviting her and *Dr. Elliott Campbell* to come and present their proposed charge. She began by explaining the charge. They have a proposal that involves identifying finance metrics that can effectively measure program success. She called the Board's attention to the fact that there are examples of development of land conservation in P3s with reward and risk for the private sector and that economic development exists in development projects. If they could better understand these risks it could help watershed programs in the states. In the Chesapeake Bay, they got into this conversation because they have the Chesapeake Executive Council, which includes governors from all of the Bay states. The council asked to convene an environmental finance symposium with finance experts to talk about, identify, and evaluate innovative approaches to leverage and incentivize private investment in Bay restoration. A suggestion from the EFCs was to identify project-specific metrics of success to reduce costs of private investment in water quality restoration. They want to propose the EFAB work on these questions, keeping in mind that there will be broad applicability for large restoration efforts across the country.

Dr. Elliott Campbell began his portion of their presentation. He explained that the Chesapeake Bay program specializes in monitoring and they have numerous metrics they already track. Part of the Chesapeake Bay agreement includes 29 different goal outcomes including tree canopy, number of crabs, etc. When you look at the goals, none address economic concerns, but there are indirect consequences on and from financing. They are proposing a new charge to lay out a framework that establishes those metrics for the financial viability of restoration and progress toward increasing viability. They envision it will be laid out in a tiered approach starting at a small scale with the ability to scale up. There was an outline included in the participant packets and they welcomed any input from the Board. The charge currently focuses on answering the following questions:

1. How do we measure financial success or failure of individual projects? How does that information inform efforts?

This question would involve developing metrics for the goals of the project and regularly reporting on those goals. They would also determine if the goals were met at or below projected costs. They suggested synthesizing factors of success or failure and amending programs to address these factors. Lastly, based on the suggestion from the EFC, they would track restoration goals achieved in relation to credit and compare those outcomes to the overall restoration effort.

2. How do we look at overall financial sources of a restoration program?

Specific metrics could include growth in private equity. Can you determine what is leveraging the ability of public funding over time by leveraging private funding? Will there be a decrease in the cost of restoration over time? This would involve creating a standard water quality credit system to aid tracking the costs of restoration over time and creating a restoration market. This would not be a trading market but a market for engaging in restoration practices.

3. Have restoration efforts translated into increased benefits from ecosystem services?

Finally, are they achieving their goals in the Bay and is that translating to economic growth? Metrics could include commercial or recreational fishing, populations of certain species, or waterborne illnesses.

Dr. Campbell continued saying, in closing, that they are requesting the EFAB identify these project-specific program finance metrics of success with a goal to drive private investment in water quality restoration. They are seeking a recommendation applicable to any large scale restoration effort and are asking them to address the three questions as part of determining feasibility. He added that they hope the results will equip watershed programs with foundational metrics to help achieve economic development along with water quality restoration.

<u>Discussion/Questions</u>

Ms. Kim said, from an investor's perspective, that she could see costs and a budget to restore but did not understand where the revenue was coming from. She asked how an investor would make their return. Internal rate of return (IRR) is key for investors and without revenue you can't calculate IRR.

Dr. Campbell responded that the DRN has pay for markets where the price is a result of many year of executing a fund to say how much it costs to reduce, for example, nitrogen. That is how they have been able to put a price on it. That has been successful in engaging private investment. They have been able to say "we can reduce nitrogen for less than you'll pay us." They are hoping to engage in more of that over time, but they don't have the numbers for the IRR for those investments.

Daniel Nees added that the Chesapeake Bay program is the guide to the restoration effort, not the investor. They want to know if the innovative stuff hitting the ground is actually working. If the cost per unit is going down, it is working because of the engagement from the private market. Dr. Campbell is asking if we can embed finance into the highest level of decision making in restoration.

Mr. Walker asked if the group could come up with a method to monetize it like carbon. He asked if they are looking for other metrics like that.

Ms. Winters responded that they were and that they were looking across restoration efforts. There are a lot of aspects and facets to restoration efforts and they simply don't have the metrics to know if we're successful from a financial perspective.

Dr. Campbell added that they are asking for a framework for tracking that price over time, not asking to put a price on it per se.

Ms. Winters also added that, for large-scale restoration effort, they want to know how they can help manage risk so that private capital is more comfortable investing. They need metrics to express that in a meaningful way. Right now they're at the starting point so it would be a good contribution for restoration efforts. Managing that risk, in part with the financial metrics, would be helpful across the board.

Mr. Anderson shared that financial metrics may not be the only metrics. Their interested investors have the measures that they are oriented around. Ultimately, question #3 may be more important than #1 and #2 because it gets at the "why." It is why they would and should care. That may not be the "why" that resonates in this room, but to the people there on the Chesapeake can see and show the benefit brought by investment. He suggested that, if the Board does take on the charge, that they beef up the third question.

Mr. Holland added that there is a stormwater retention market in DC. The metrics from the financials are quite simple, focusing on whether they are meeting client standards set by the DC government. The question is whether they are doing it at a price with enough spread to meet investor return. They have their own internal metrics around conservations that are outside of the program scope. They're metrics that they chose and they fall under social, environmental, and other. The investors they have for the project have a rate of return that they want to hit and they want to know if the project can execute to the compliance standards from government at the set price. Investors won't be so concerned with how the Chesapeake Bay program tracks their financial metrics. That is not necessarily a concern for the financial community. The Board can help you find metrics to track successes and also have the background to enable policy to make the market work. If you have a metrics-first standpoint but no policy background then you don't know the parameters that are already in place. The enabling conditions are critical. For the Board to do meaningful work, they would need to see what those parameters are to make recommendations

Ms. Winters responded that distilling the conditions for the enormous scale or large-scale restoration projects would be really helpful.

Mr. Holland cautioned that they should not overcomplicate it. The key questions circulate around what measures are forcing action, what in the financial incentives are enticing action, and what the opportunities are for demand and supply. Getting into how the parties meet in transaction will be important and being able to distill that is critical. He suggested looking at the DC program, which did a good job summarizing some information about market frame and underlying policy, to see what makes it possible for the supply and demand community to meet and the mechanisms to translate that.

Ms. Throwe started by sharing that Dr. Campbell was a colleague of hers and had done a lot of work on these issues. They have also worked with the Chesapeake Bay program office. She said that this charge is very important for the Mid-Atlantic region and other states will benefit from the outputs. She said that Mr. Holland had framed how to tweak the program nicely and she also wanted to follow up on what Mr. Anderson said about the important of question # 3. If the comments from the team don't reflect where they wanted the charge to go, they can provide feedback back to the Board about how to best make this work for the nation as a whole.

Ms. Roberts De La Parra circled back to what Mr. Anderson had said, sharing that people don't really care how you do it, and they want to know why. They want to know what is in it for them. You need to tell the story of why to make it successful. That is what matters most in what you want to present to the community.

Mr. Hughes volunteered to be on the workgroup. He shared that North Carolina has struggled with nutrient sensitive waterways and they have a state study looking at why they haven't moved forward. He said they are stuck without these metrics. In a training network they are basic concepts but not in this playing field with 60 municipalities trying to meet nutrient guidelines. They are blind without the metrics that exist for other public services such as treating 1,000 gallons, picking up trash, etc. He said that, in this context, he can't get people to explain why they prioritize one project over another. He concluded by saying that he thinks bringing some formality to that world would be very helpful.

Ms. Cupit shared that she was interested in this work when she saw it on the agenda. She asked where they are getting restoration funding from currently.

Ms. Winters responded that they have some appropriated funds and private money. It includes state funding, funding from Congress, and some other streams from private capital. There is also some funding from trading programs as well.

Ms. Cupit echoed Mr. Hughes in saying that she would be interested in the charge and would want to help whoever was on the committee.

Ms. Kim shared that she was also interested and thought that her experience working with wetland mitigation banks and carbon trading would be helpful. Defining your product is key to ascertaining the value. For carbon and wetlands, there is a discrete size of a product. That would be helpful in this context.

Ms. Winters responded that was something that we're trying, with the questions, to illustrate that exact point.

Mr. Shapiro thanked everyone for a great conversation and reminded them that they were very short on time. He said there were a couple of levels of thinking in the discussion. One is to focus on the third question and show how we as a society are paying billions to clean up the Bay and reaping the benefits, and economists are working at the business level to value those benefits. Next, there are the micro decisions that stem from the process of figuring how much reduction of nitrogen, phosphorous, and carbon provide a healthy bay. Then, there is a decision process to allocate those reductions across the seven impacted states and DC, and then how each jurisdiction collectively and individually hits their goals in a financially sensible way. Some of the points of the first and second question relate to those levels. He thinks that they still need to work a little to refine which piece of this the EFAB could get into. They do need a little work to shape the questions into something that the Board can get its arms around. The EFAB will work with Ms. Winters and Dr. Campbell to do just that. He thanked them for presenting and bringing this charge to EFAB and pointed out that these are the types of projects that are good examples of complicated projects for analysis.

Mr. Shapiro moved directly into the Region 10 discussions of additional new charges.

New EFAB Projects – Region 10: Alaska Tough Rating System, Rural Alaska Waste Backhaul Service Program & Drinking/Clean Water SRF Funding To Address Lead Fixture Replacements

DW/CWSRF Funding to Address Lead Fixture Replacement

Richard Green

Richard Green presented via phone line as did the other Region 10 presenters. He started by thanking the Board for having them. He asked that all questions be held until the end so that they could quickly get through the presentations. Mr. Green is helping implement the Region 10 DWSRF lead abatement program. The program has experienced a lot of changes including recent changes from lead in drinking water. DWSRF and CWSRF can both be used for full lead service line replacements. They do discourage partial lead service line replacements. The DWSRF also allows the replacement of lead fixtures in conjunction with full lead service line replacements. The WIIN Act provided $100 million to Flint for replacement efforts. There are other lead funding programs that have been authorized but not funded yet. He directed the Board to slide 3 and explained that it talks about a program authorized but not funded in schools. It is a good program but without funding they aren't able to do anything with it. Subsequent to WIIN, in late July 2017, draft legislation, HR3387, proposed changes to the DWSRF program and authorized $5 million annually for new grant programs for school drinking water fountain replacement and testing of lead. They are assuming that funding won't go very far even if it is funded. The DWSRF has made funding available for lead and other health issues. States are authorized to provide total grants to address subsidies from drinking water and the set asides have been available to address AWOP, design and planning, and one-time tap testing to determine severity and extent of the problem. If a tap sample is above the action level, the water system must do something, even if it is from an internal plumbing source. DWSRF eligibilities have always included lead remediation, design, construction, replacing lines, changing the sources, and other projects. They have a lead service line replacement clarification memo and examples of lead service line replacement projects highlighted in the slides.

Mr. Shapiro interrupted Mr. Green to explain that the Board had a conversation earlier in the meeting about lead abatement and had gone through a lot of the background materials before. He asked Mr. Green to jump to the specific ask that he is bringing to the EFAB. He also suggested that this work could be an add-on to the Board's existing project so they would like to get to the specifics to see if it was a good fit.

Mr. Green moved to the next slide to show, if they are just doing lead service line abatement and are not addressing what's inside, that is the equivalent of a bridge to nowhere. He shared that states come to them saying they have a school that wants to use DWSRF assistance to replace water fountains. The region has to say no, if they're not a public water system. Mr. Green wants to find a clear path for states to fund this type of internal plumbing fixture replacement using the DWSRF - a pathway that allows the replacement of internal plumbing fixtures that contain lead. There are 99,000 public K-12 schools in the U.S. and lead in drinking water is a condition that needs to be addressed. He stated that their kids and country deserve better than flushing programs at schools. He added that they have a 2003 DWSRF policy memo that allows DWSRF loan set aside funding for water efficient fixtures. He postulated that they could be used to replace lead fixtures if the project was also showing water efficiency gains.

Mr. Sawyers asked, in the interest of time, if Mr. Green could move forward to the request for the Board.

Mr. Green asked everyone to move to the final slide, slide 27, and review the separate handout provided in the participant packets. He shared that he needs help identifying criteria for whether DWSRF-funded lead replacement projects could be used to say they are improving water efficiency. 1) He is asking the Board for a template to show the estimated water and energy saved and to be able to convert that to dollars. 2) He is also asking for help to develop a model that estimates savings produced by the project and return on investment, such as a cash flow opportunity calculator or something else available that could do that. 3) He is also asking for an assessment as to whether it is technically feasible to comply with the Lead and Copper Rule and other requirements. 4) He is asking for assistance to prod the right people to use the water security test bed at the Idaho lab. It is a public water system mock-up and includes 100 feet of lead service lines. They are set up to do some useful lead testing there such as a peer reviewed study of corrosiveness of different fixtures, pipes, and the effectiveness of Point-Of-Use treatment. 5) Then getting into the thorny policy and legal issues with lawyers, he is asking who would be responsible if they do retrofit water fountains with built-in POU treatment. Ultimately, who is responsible for treating and maintaining the filters? If it is an employee, do they need training like a PWS operator would? Mr. Green suggested that if there were questions about the charge that he could be reached by email at any time.

Discussion/Questions

Mr. Shapiro shared that he thought some of the components of the request were outside of the scope of the EFAB but there were other places in the agency, like the Office of Research and Development, which might be a better fit. The issue most closely aligned with the EFAB is the rationale for extending the SRF within the structure domain for internal replacements.

Mr. Meister thanked Mr. Green for his comprehensive presentation. He shared that they may need a little bit of time because their final report should be in the hands of the agency in late September and once he has that document it might be an opening to refine the charge. He shared that if Mr. Shapiro, Mr. Sawyer, and Mr. Liu think it is appropriate they could further discuss this proposed charge at their next meeting in early 2018.

Mr. Shapiro said that they would follow up and clarify the charge. In essence, they will take a look at doing this work subsequent to the current lead project.

Rural Alaska Waste Backhaul Service Program

Gabriela Carvalho

Gabriela Carvalho presented a proposed project charge moving the conversation from water to waste. She is looking for assistance to develop a business plan for a waste backhaul program out of rural Alaska. Ms. Carvalho directed the Board to slide 2, which described the problem they are currently experiencing. In rural Alaska, a lot of communities are not accessible by road and communities dispose of waste in unlined landfills, which are not designed for the disposal of hazardous waste. These communities experience leaching of their waste into water sources, and landfill fires happen frequently and can impact nearby homes. These are public health issues for these communities. Hazardous waste storage is more expensive than backhauling the waste. Backhauling can take advantage of empty boats, trucks, and planes that are leaving remote areas after bringing resources. Slide 4 gives a quick sense of the high costs to get waste out. They have been using assistance program grants to pay for backhaul but due to revised Indian General Assistance Program (IGAP) guidance, the tribes will not be able to use IGAP funding for backhaul after FY2020. Slide 5 provides a vision for the program. They want to learn from these villages how to get waste out of their communities in an efficient way locally and across regional programs. They want to ultimately make it an efficient program that saves money, grows capacity for communities, creates jobs, and streamlines the transportation network for backhaul. She directed the Board to an overview of the program on slide 6. The program is being developed through a collaborative stakeholder engagement process with the key piece being uniform training to make sure waste is packaged safely and uniformly. The program will ensure they get the most money out of backhauled recycled commodities. The nuts and bolts of the program are well defined now. The implementation schedule will use calendar year 2017 as a baseline and run pilot programs in the summer of 2018 and 2019 with the program going live in 2020. As the program evolves in the following 6-10 years they will increase the villages serviced and look for ways for the program to become financially self-sustaining. Ms. Carvalho moved onto her request of the Board. They are looking for a 10-year business plan that incorporates revenue from multiple sources. They are working on different areas but are hoping to get an assessment of revenue from service fees for government projects, household fees, and recycled commodities.

Ms. Carvalho provided additional details on the charge and the work that they have already initiated. They are expecting the program to cost $2 million a year to operate at the initial launch, at which point the program would serve 100 villages.

- Household fees – They are looking at creating a utility service to get hazardous waste out of communities. Implementing service fees would be challenging. Only about 20% of the communities have a waste fee because of the economic challenges these communities tend to face. On top of that, there is only about a 50% payment rate for the communities who have fees. They are hoping the EFAB has some advice about what utilities are doing across the country – using income, population, or other structure for household fees. They're also interested in any suggestions for other ways communities can participate.
- Federally funded projects – These would include energy, housing, and sanitation. Federal agencies are funding the development of new infrastructure but, due to the limited availability of waste utility fee structures, the government cannot always pay the communities waste disposal fees from their construction projects. So there are government projects building and creating waste and the community is not capitalizing on that. They are interested is learning how they can work with federal, state, or local agencies with federal funding for projects to ensure the waste is being paid for adequately and the communities are compensated for waste disposal. They're interested in exploring whether it is possible for government to pay for backhaul of community waste if they are already paying for project backhaul. They're looking at how the program could interact with government funded efforts.
- Recycled income to offset backhaul costs – As more commodity materials are backhauled, they want to determine if they could leverage income from recycled commodities to support the backhaul program. What could they reasonable expect for revenue from batteries, aluminum, other metals, or other recyclable materials?

In essence, they want recommendations on the item presented. They would like to look at other models to determine how other industries are paying for similar services elsewhere. She asked if this was the type of project the EFAB might be interested in taking on.

<u>Discussion/Questions</u>

Mr. Shapiro asked for reactions from the Board.

Mr. Arndt asked if the state of Alaska had been looking at this as a state responsibility.

Ms. Carvalho said that they were and that the state was at the forefront of developing the program along with people on the ground. EPA's role connects with the IGAP funding and general assistance program grants since these communities will no longer be allowed to use that funding to provide this service. It is an Alaska issue and they are engaged. What they are trying to do is support the transition as the current funding won't be allowed to be used anymore.

Mr. Shapiro stated that this program is really a partnership with the state. Ms. Carvalho stated they are working with federal agencies as well and people have been contributing over the last few years on this plan. Region 10 has been involved and are looking to bring other minds into the fold to help solve the problem.

Mr. Liu shared that he thought the proposal was more of a general business plan versus looking at the financing aspect specifically. He asked Ms. Carvalho to clarify if that was what they were looking for.

Ms. Carvalho responded that their primarily need is the financing component of the business plan. If it is a financing project, they will take whatever EFAB can produce to turn it into a broader business plan. At the end they will look for a complete business plan and use EFAB input as much as they can.

Mr. Shapiro shared that this issue is daunting and at first glance it sounds like there may not be a self-sustaining market. He suggested that they could make it more efficient but not sustainable. It seems like there needs to be some level of government or public subsidy in addition to whatever funds are raised by the program for it to function.

Ms. Carvalho pointed out that Mr. Shapiro made a great observation and that, ideally, they could design a program to be self-sufficient through some potential services outside of backhaul. Once the systems and structure are in place, could the program provide site remediation and other services where the fees could support backhaul? In developing the capacity, what are the other business opportunities that could make it financially sound in the future? She agreed that just providing backhaul services will not be enough.

Mr. Shapiro thanked Ms. Carvalho for her presentation and her time.

Alaska Tough Rating System

Margaret McCauley

Margaret McCauley began her presentation pointing out that her charge intersects with government procurement roles. She directed the Board to slide 2, which provided an example of some of the shipping costs for Alaska. Transporting to and from Alaska is expensive and things break down quickly because of the extreme conditions. The budgets for purchasing and wastewater management in Alaska communities are low, there is more trash and it builds more quickly, and things are more expensive to replace. There are waste challenges from overfilling landfills, to burning trash, to potential air impacts when things break down. They are interested in creating an Alaska Tough rating system which would be aimed at government agencies who have to go for the first and lowest cost which does not take into account how long products will last. Durability ratings would be helpful to reduce overall waste generated. Items that would fall into the Alaska Tough program could include plastics, electronics, and heavy machinery that are all used on a daily basis, break down, and require replacement.

This is essentially a lifecycle costs idea. She directed the Board to slide 9, which shows more of a lifecycle approach to purchasing choices. This would help consumers make decisions like which gloves will work for construction site workers and result in protected hands for the longest time. Ms. McCauley asked the Board if they would be able to see if an Alaska Tough product rating system idea could work. She shared that this is her first experience with the EFAB and is not sure if the program was pitched effectively but is looking for feedback and if the question matches their charter.

Discussion/Questions

Mr. Liu pointed out that this charge is similar to the previous one and that combining them and making it more targeted at the financing portion may be something for the Board to think about.

Ms. McCauley agreed that there was definite overlap. She explained that this program is something like an auxiliary to the previous which is at a utility scale.

Mr. Shapiro shared that what struck him is that, they already have a great brand name, but a problem with other green product programs that they require a lot of technical work to define product categories and to determine what makes it “tough” in the Alaska context. He added that there are probably people in the public and private sector that look at those issues that would have to be brought in product by product to figure out what it means, how you measure it, and what appropriate performance metrics they would use to show the products meet the criteria. Those technical components are not where EFAB expertise is.

Mr. Sawyers suggested that it might be useful to talk to one or two of the EFCs and then talk to Region 10 about whether there are projects for the Board here. They will need to have subsequent conversations about what is in their portfolio that would work.

Mr. Shapiro also pointed out that they could circle back with the recycling folks to get their perspectives since there is a connection there.

Mr. Sawyers said these projects are far outside the water space which is great and that if there is something they can work with they need to look into it. He added that Mr. Liu and the recycling team would explore what is within their expertise.

Mr. Shapiro concluded the new charge presentation by stating that these are huge challenges for Region 10 and Alaska and EFAB needs to make sure they give the charges consideration to find the nexus where the group can contribute.

Public Comment

The public comment period was opened at 3:45 pm. No public input was provided.

General Discussion and Next Steps

Mike Shapiro
Tom Liu

Mr. Liu started the final session by thanking everyone for coming, particularly those who had trouble getting to the meeting due to the weather.

Mr. Shapiro thanked the incoming members and current members for their support and then opened the floor to members around the table to give their final thoughts on the meeting:

Ms. Kim shared that she was interested in the Board taking on the charge to develop financial metrics for the Chesapeake Bay.

Mr. Mehan shared his interest in the non-point versus point source issues covered in that charge.

Jennifer Wasinger expressed her interest in further P3 development.

Mr. Meister echoed some prior input from other board members that they should consider taking on the Chesapeake Bay project to develop measurement metrics for restoration projects. Ms. Beary agreed.

Mr. Anderson suggested that the Board consider picking up some charges of their own. Using previous charges they could pursue interesting follow-on work that takes a look at some big-picture items.

Mr. Walker added that many of them think in terms of the SRF and so having different perspectives here can help them look at outside solutions.

Ms. Cupit said she would like to see a skills matrix of the board members so that they can see where everyone's areas of expertise are. That would help the Board know where their strengths are. She added that she would also like to see the pre- and post-development comparison and Chesapeake Bay program work pursued.

Mr. Weiss thanked the incoming members for their contributions.

Mr. Sawyers said that he appreciated spending time with the EFAB again. He was involved for 13 years and after getting into the agency he stepped back. Now that he is able to get more involved again he is really excited about the new expert consultants and the composition of the Board. He told the Board that the agency would look to them to help reimagine financing. He appreciates the board member's willingness to give up their time and is looking forward to further engagement and working through interesting and important issues.

Ms. Bowie thanked the Board for their years of support and friendship.

Mr. Liu concluded the meeting by summarizing that the Board would go back to the proposed charges and make sure they were definitive about the role EFAB would play in each. He added that a lot of people had indicated an interest in the projects presented at the meeting and to keep an eye out for an email with more specifics about the charges.

The meeting adjourned at 4:13 pm.