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*Christl Tate: Patrick Jones; MDB, Inc.;*

*Christl Tate: Maureen Tooke; EPA; Office of Waste Management*

*Christl Tate: Christl Tate; NEHA; Project Coordinator*

*Christl Tate: Eric Casey; NOWRA; Executive Director*

Patrick Jones: Good afternoon, everyone, and welcome to today's call. I'm Patrick Jones, and I want to cover a few housekeeping items. Right now, you should have the GoToWebinar session up and running and see the welcome presentation slide. If you're having difficulties with that, please visit [www.gotowebinar.com](http://www.gotowebinar.com) and select the FAQs, they can assist you in getting the presentation up.

Once you have the presentation up, if you would like to ask questions today during the session, we keep the audience on mute to minimize background noise so to ask questions you'll use your GoToWebinar panel, [inaudible] it looks something like this right now, but from time to time it will minimize the dispatch so that you can see the entire presentation. You enlarge it with the orange arrow there, just come back to the slide, ask your question where it says question, hit fin to submit it to the moderator and your questions will show-up [inaudible]. We encourage you to ask questions throughout the session as they come to your mind.

Our Moderator today, Maureen Tooke, will handle all questions at the end of today's session. And, with that, I'll turn it over to Maureen. Maureen?

Maureen Tooke: Thank you, Patrick. Let me see, I'm going to put up my slides here and hopefully everyone can see them. Welcome to EPA's Decentralized MOU Partnership Webinar Series. This is I think maybe our fifth or sixth in our Series, which we do archive the sessions. Today we're going to be talking about the papers that the MOU Partnership developed and released late last year, highlighting the benefits of decentralized wastewater treatment systems.

I, myself, will be presenting today. I'm going to show my screen, give me one second, let me get back to my [inaudible] here. I will be the first speaker today, and joining with me are two of the MOU Partners. First, we'll have – following myself, we'll have Christl Tate with NEHA, and I'll introduce them as they come up, and the third presenter today will be Eric Casey with NOWRA. He's talking about each of the papers and from their perspective from their organization and for each of the subtopics of the papers. So we'll get started.

As far as myself, I've been at EPA eight years officially. I have more than 15 years' experience in the field. I am the lead for the Partnership, I manage the Partnership, also our Homeowner Outreach and Awareness efforts through the Septic Smart Program, which you'll see at the very end, we'll talk about that or just show the URL for that, that got released in November. And, also, leading the development of a state model onsite program for the states in the Chesapeake bay Watershed, that's part of the President's Executive Order that was issued in May of 2009, which is still under development, but has been released for public comments. So let's get started.

Just a bit of an overview of what the webinar will be about today, just a little bit of background on the decentralized partnership and the development of the papers, and then going into the benefits of using decentralized wastewater treatment systems, that they overall and an overview one of the four papers does talk about it and then more of an overview, talking about it being a sensible solution, and then the economics, the positives of the economics of using decentralized systems.

Also, that they are providing environmental protection and preservation and protect public health, where Christl Tate will be speaking from the National Environmental Health Association, and the challenges that even though these are good systems to use and are reliable that there still remain challenges with using those, and Eric Casey will be speaking with us from the National Onsite Wastewater Recycling Association.

So to start off, just a little bit -- a quick background on the Partnership -- we first signed the Partnership Agreement in 2005 with six organizations signing the MOU, and we grew three years later adding six more that represented state organizations, like the Association of State Drinking Water. So if folks could mute their phones, please? I'm getting a ringing phone in the background -- thank you. We grew in 2011 to a total of 16, and adding our first Federal partner with the CDC.

And so the purpose of the Partnership is it's an ongoing cooperation relationship between EPA and the signatories, and I'll show the logos of all the partners later, and we do have the information on our website about each partner, that to effectively and collaboratively address management performance issues pertaining to decentralized systems. Pretty much in the absence of Federal regulations for most onsites, except where a permit is required, this group of folks that are leading the industry worked together to maintain professionalism and develop certification programs, things like that.

So as far as the position papers go they were developed collaboratively. We developed work groups of the partners and then collectively came together as a whole. Every partner was involved for the purpose of educating communities about their wastewater infrastructure options, that it's not just the sewer that's available or that someday the sewer will come, it's that there are alternative options and with the economy the way it is these days and the inability to come up with capital, the capital to put in a wastewater treatment plant, decentralized systems and cluster systems, which are larger systems, can support those wastewater needs.

Each of the partners' organizations reviewed and approved each of the papers, each of the partners' logos are placed on each of the papers showing the support and all, everyone signed off on the content of the papers. We had the papers ground truth, if you will, by EPA's Local Government Advisory Committee, the Small Community Advisory Subcommittee, they are members that are independently appointed of locally elected officials, mayors on there, for example, represented nationwide. So we got to really make sure that we were saying what we needed to say and that the message was getting across adequately.

Just to start, decentralized wastewater treatment being a sensible solution. Decentralized wastewater treatment consists of a variety of approaches for collection, treatment and dispersal

and reuse of wastewater. Decentralized term is used to incorporate not just individual septic systems, as many people know them, but there are the conventional systems, there are advanced wastewater treatment systems, as well as individual systems, as well as cluster systems, where for example you had a development of 20 homes, 30 homes that they were on one system with service running from each of the homes into one collection system, so in many wastewater treatment plant, if you will, that is managed and maintained by a responsible management entity, or RME, and that can – who can be an RME can vary depending on the jurisdiction.

Decentralized wastewater treatment can be a smart alternative for communities, particularly small ones, because you are avoiding large capital costs that you would see in a sewer, also using energy and land wisely, using more smaller footprint than a wastewater treatment plant, and then also if there is a failure on a small system it's a much less impact on the environment than if a wastewater treatment plant would have a failure, which we do see in large storm events and things like that and kind of more recent history with Hurricane Sandy that came through, we did see some of those releases of raw sewage into our waterways. And also provides protection of the communities' health.

And for where it's worked, in Rutherford County, Tennessee, a step system was – that consisted of 50 subdivisions and a recirculating sand filter, combined with a large strip dispersal system equipped – and they're all equipped with their own pumps and control panels discharging to a centralized collection. So one of the many things a cluster system can do is that it can either be treated there onsite within the cluster system or it can then be routed to a central sewer. And this is all owned and managed by Rutherford County, and the URL there, you can find out more about that project.

This is just one of the examples that is included in the paper, and I'm going to do one for each of these, and I know that Christl has some examples and Eric, as well. Decentralized wastewater treatment can be cost effective and economical. Decentralized wastewater treatment can provide long-term and cost effective solutions for communities by avoiding the large capital costs, reducing operation and maintenance costs and promoting business and job opportunities.

One of the examples I have for this, in addition to the one that I have listed, is that when we had the Small Communities Committee review this, a Mayor from Oklahoma on that Subcommittee had exclaimed that she was so very excited to learn about this because she, through her community or the city's engineer was only made aware that extending the sewer lines was the community's only option to develop their business district. By these papers being presented to her and the information given to her about decentralized systems she was very excited to learn that their community had options because they were unable to afford the expansion of the sewer lines and doing a small onsite system, decentralized system would be a much more cost effective option for them, and then she was going to go back to her community and be asking for more information on a smaller system, like these, again, that would be managed.

And then more specifically on the way it's worked, also in the paper here is in Mobile, Alabama they were faced with significant growth and an aging infrastructure, which is probably the case for most small towns across the nation. The Mobile area water and sewer system and the City of Mobile began using cluster systems to serve their new residential developments, which is

something that EPA does promote in new residential developments. It may be more difficult to retrofit an existing neighborhood, but definitely in new residential developments using a cluster system can be more cost effective.

By doing this the community was able to improve the service to their residents, new business and revenue sources created, they were able to protect the water quality using professionally managed systems, while saving money on costly sewer expansions, and they also were able to reuse the treated wastewater, and many communities are doing that, as well, using them to fill ponds and to apply to the land so that it can then be reentered into the system, into the groundwater system and recirculate back through.

Decentralized wastewater treatment can be green and sustainable. Decentralized wastewater treatment can meet the triple bottom line of protecting the environment, being efficient and contributing to the community wellbeing by increasing water quality and availability, using energy and land wisely, responding to growth while preserving green space, and using the natural treatment properties of the soil.

And where it's worked, one of the examples in the papers is the Shannock Woods cluster system subdivision in Rhode Island. The cluster system was chosen for this community to manage their wastewater in this deep community because they are able to – the sewer lines running to this community was not an option, so rather than having 16 individual systems which would need their own plot of land to be able to treat the wastewater, rather than doing that and then taking up much more land than a cluster system would, they selected a cluster system and minimized the soil erosion, maintained their scenic views of the community because of preserving the green space, and also protecting their drinking water in this highly permeable aquifer [retard] area.

The selection of the cluster system drastically reduced the land needed for the wastewater treatment, it preserved 50% for open space, and the system they selected also was able to remove 50% of the nitrogen, and to learn more about that you can go ahead and on your time, click on the link and find out more about that project.

And Christl will talk more about this, but just to note that decentralized wastewater treatment can protect the environment, public health, and water quality. It can protect the environment and public health and water quality in homes and communities by providing reliable wastewater treatment, reducing conventional pollutants, nutrients, and emerging contaminants, and mitigating contamination and health risks associated with wastewater, and more will come from Christl.

What's up next for the Partnership papers, this will become a Series. We don't have every topic laid out because a lot of topics emerge seemingly annually, but the next one that we are currently working on, and I don't have a release time for that, getting all of the partners to review and develop this and sign-off does take some time, but we believe that it's necessary and important, but we'll be working on the economics of what we're calling the hidden workforce.

You see a lot of articles these days about infrastructure, the nation's infrastructure, but really most people or articles are just writing about the roads, the hidden infrastructure of water and

wastewater, what's below our roads, that people don't see. The average age of the wastewater system in D.C., I believe I read just yesterday, was 77 years of the pipes below the ground, so it is something that is going to have to be addressed, obviously, but clearly it is an issue, but the issue remains.

And investing in water and wastewater infrastructure, and the workforce needed to repair it is kind of the story there, that the wastewater field will need to grow as our need to continue and our infrastructure ages. And the Department of Commerce does estimate that each job created in the local water and wastewater industry creates 3.68 jobs in the national economy and each dollar spent yields \$2.62 in economic output in other industries.

I have this slide up for follow-up, if you have more questions for me I will do – I will field all the questions at the end, but my contact information is here. If you'd like to know more about the Partnership and the papers, [Bea Morel] is here, as well, and also the EPA released a case studies document that talks about the different case studies where there are different management levels coming from our voluntary management guidelines. There are five levels of management and there are a few examples of each in this document that you can go and review, and these are all of our partners here.

That concludes my portion of the presentation, and we can – these slides, just as an FYI, all of these presentations will be archived and available and there'll be transcripts, as well, so if you missed something you can always refer back, and if you have questions that don't get answered feel free at any time to e-mail me and I will respond. We're going to leave that for the end.

So the next presenter is Christl Tate. She is currently the Project Coordinator at the National Environmental Health Association, where she has worked for the past 14 years providing education and training to environmental health professionals. Her role includes being a liaison for decentralized wastewater, emergency response, and environmental public health tracking programs. Christl?

Christl Tate: Hello, hi, everyone. So I'm Christl Tate, and I'm with the National Environmental Health Association. Thank you, Maureen and EPA for inviting me to participate today in the webinar. The topic for my portion is public health, the environment and wastewater, which as you just heard is the subject for one of the EPA Partners' whitepapers -- so I am – there we go – so wastewater and health.

Ever since John Snow, back in England, stopped the cholera epidemic, the correlation between dirty water and disease has been studied. So in talking about wastewater and environmental public health, we really aren't talking about anything new. If untreated sewage has direct access to water for drinking, washing dishes, fruits and vegetables you can pretty much get sick, and I don't think I'm going out on a limb here by saying that this is an established correlation.

And in terms of environmental public health, usually only hear about the wastewater contamination when there are system failures or system bypasses, municipal treatment systems we like to call them. There was a perfect example of this in Wisconsin, Cook County, there was an outbreak of Norovirus that was linked to a restaurant and directly to the restaurant's septic

system to a faulty installation. Unfortunately, we don't have a lot of stories about public health being protected from wastewater because when that happens, for this country it's pretty much the status quo and usually not anything newsworthy to say, oh, yes, I did get sick from my drinking water or my food today, that's pretty much how it is.

So the EPA MOU whitepaper, this is just a quick screenshot of it. This was developed, as Maureen said, with input and support from a wide variety of sources and professions, contractors, engineers, regulators. And this one specifically deals with public health and the environment.

This public health whitepaper has some very good information on it for people, especially policymakers, general public, people that make decisions about using these systems on how decentralized systems interact with the environment and public health. I know this slide the text is hard to see, so let's go on to some of the main topics. For instance, decentralized systems provide reliable wastewater treatment. The treatment provided by decentralized systems these days is as good as a big pipe system if they are properly installed, maintained, and the appropriate technology is used. So pretty much sounds like the same requirements that municipal systems have, they have to be properly designed and built and maintained to do their job.

There's a wide variety of options, there's a huge variety of treatment options now for decentralized systems. It's no longer just a septic tank or a cesspool anymore. There are advanced treatment options and different collection methods for communities to choose from, and they can all protect public health and the environment. It's not a one-size-fits-all. And the great thing about decentralized systems is that they can be developed to address a location specific need, and there's also advanced technologies that can mitigate public health concerns. Pathogens are scary, and we can take care of them or at least mitigate them with decentralized systems.

So basically this whitepaper and really all these whitepapers are meant to make it easy for you to get to where you need to go, were meant to make decentralized wastewater treatment easy to understand and feel comfortable with, and there is a reason people should feel comfortable with it. Let's take a quick look at some of the advances this industry has seen over the last 10 plus years.

Advanced technology, there's been some great achievements in technology and research in this area. Systems can be designed now that allow homes to be built on previously unbuildable sites. There's some research studies done, CDC, Centers for Disease Control in Atlanta, has done some studies, [NFS] has their studies that they do, great education has been developed, the Consortium of Decentralized Wastewater Treatment has developed a number of national training programs that can be given anywhere, speaking specifically, they have – they developed the Installer Training Program, they developed an O&M Training Program. I believe there's a High Strengths Waste Training Program, all on a national scope. There's also a specific Inspector Training Programs, [inaudible] Training Programs, there is really a lot of education out there.

If you go along with that education, there's increased training opportunities. So take the education developed and deliver it to the public, both NOWRA and NEHA has national training programs. There's the Pumper Show that has multiple days of training programs now. It used to be just more of a kind of a show and not necessarily training, but now they have multiple days of training during their show.

And then, of course, the Sustainable Properties, that Maureen touched on. In this day of greening and sustainability and especially economic sustainability this is an industry that supports a lot of small businesses in the same area where the systems are located. Outside of the manufacturers there's pretty much not a national company that installs systems, so these are supporting small businesses.

I heard a statistic the other day that 10% of energy usage in the United States is spent on moving water from one place to another, which is just an amazing amount. So if we look at all these advances and yet there's still the perception among some groups that decentralized systems hurt the environment and public health and are second class or last resort type systems.

And if we go back to the first topic of the paper, decentralized systems provide reliable treatment if they are properly installed, maintained, and appropriate technology is used, but really how many of us have the maintenance requirements for our system or require training for credentialing for regulators or for contractors. I realize I may be preaching to the choir here and all of you have great programs in place and I hope you do, but really at the end how can we say that decentralized systems are as good as the pipe if we don't enforce the same requirements and standards that exist for the big pipe systems.

If public health is a concern why aren't the steps needed to protect public health being taken? And that kind of leads us up to misplaced priorities, and we focus on details and lose the big picture, and regulations are a big part of this. Sometimes we focus on our – excuse me, sometimes we lose focus on our overarching goal, which is protecting public health and the environment. We get comfortable with existing regulations and maybe don't work too hard to change those to have – that don't have a scientific basis or don't add regulations when they are needed. We don't want to be accused of putting an undue burden on someone or putting them out of business, that's no fun, it doesn't make you feel good, it's a hard choice to make.

There are consequences, there's a history of counties in one state that allows surface discharge without any O&M inspections, sampling, any of that, so no enforcement and no protection of public health. And then to make matters worse, there was a study done that showed that by allowing this to happen in southern Illinois groundwater was contaminated and along with that people's drinking water, wells were contaminated with this surface discharge without any pretreatment.

So this all leads to another problem, by supporting and enforcing regulations that don't make sense we're not drafting them when they are needed, we alienate the contractors and usually it's the good contractors, whose industry we're trying to regulate and whose support we need for rural changes and program updates and we rely on their professionalism and their expertise to protect public health.

And we can also scare the general public into not reporting failures because they're afraid what might happen or they just take that as the status quo, my septic system is supposed to bubble up in the summertime. We haven't set standards that are uniform and then enforce them. There are roadblocks to decentralized systems, for sure, and I'm sure Eric will touch on a few of them. So we, as the regulatory community, need to realize that some of them we're creating for our self.

So, in the end, what can we do? Well, provide training. If you don't have training programs in your areas or state associations that you could work with, work with the National Partners to bring it to your area. Both NOWRA and NEHA have traveling training programs. I'll just say briefly we just worked with NOWRA on delivering the two-day Installer Training in New Jersey. It was wonderful, the instructors were prepared and knowledgeable, and had an excellent response from the audience. It was really a wonderful program to bring together to New Jersey.

Continue to bring contractors and regulators together in joint meetings. It's easier to support someone when you understand where they're coming from, it's easier to work together that way. Here in Colorado where I am there used to be the Colorado Environmental Health Association and the Colorado Professionals of [inaudible] Association held joint meetings so that they could be educated together and learn together and build those bridges that are needed for collaboration and thoughtful rule development.

And support regulation review and realistic regulations, you know, base them on existing science, learn what other places are doing and what works. Sometimes we all have our own internal roadblocks with policymakers and regulations. If we can at least back what we're doing up with some science I think we'd have some more people on our side. We can also work cooperatively to bring cause of awareness to decentralized wastewater systems, whether that is through joint efforts like this EPA MOU Partners Group or joint training for joint meetings.

So that's all I have today on public health and decentralized systems. I truly hope it was helpful and maybe it'll be motivating to work together to build programs, to support the industry and public health. We appreciate it. Thank you.

Maureen Tooke: This is Maureen. I hope everyone can hear me. I'm going to introduce Eric Casey, he will be presenting next. We're going to be talking -- Eric began, became the Executive Director of the National Onsite Wastewater Recycling Association, NOWRA, in June of 2010. He has responsibility for the day-to-day management of NOWRA's operations including communications, education, and training, industry and government relations, and the interaction with the related state organizations. He has more than 30 years of experience in working in association management and has held senior positions with organizations in a diverse range of industries, including forestry, financial services, telecommunications, corporate travel, and mailing services. Eric?

Eric Casey: Maureen, thanks a lot. I wanted to spend some time today talking about some of the challenges and the opportunities for implementing decentralized wastewater treatment. Before I do that I'd also like to thank EPA for the opportunity to address this audience. I appreciate it very much.



And I don't know that there was any organization more excited about the release of these position papers than NOWRA was, in large part because one of the bigger challenges that I think our industry faces is educating the public on the – mostly benefits to onsite systems, but all of the features of onsite decentralized systems.

These documents were actually specifically intended to help really members, anyone within the industry who needs to go out and try to educate those individuals who are part of that decision chain that makes wastewater infrastructure decisions, whether that would be developers, whether that – or elected officials at the local level, utility managers, the engineering community. I believe that these documents make a compelling case that will work for any of those audiences, particularly elected officials and people at the county level who have a lot of responsibilities in their local jurisdictions, wastewater being just one of them, and their lack of knowledge not being surprising, at all.

One of the things that I think that is important to note is that wastewater, decentralized wastewater treatment is a proven technology. The science is well established. As you may have seen from Maureen's slide, there are 16 organizations plus EPA that have signed off on this. If the science wasn't there, if the technology wasn't working effectively I can guarantee you that all of those organizations would not have endorsed these position papers, and the fact that they have is one of many different ways that you can prove that the science is, in fact, well established with these systems.

Decentralized wastewater treatment systems can treat wastewater to the same level and in some cases even better levels than a centralized collection of treatment system can do. Again, it depends on the particular needs of the site and the stakeholders that own the decentralized system in terms of what it specifically does, but the technology is there to treat nitrogen, phosphorous, emerging contaminants, as well as the more well-known contaminants and glues that contribute to poor public health.

The technology, itself, is more often than not it's lower cost alternative than other alternatives for wastewater treatment, such as extending the central sewer out to a community versus using either septic systems or larger onsite systems, such as cluster systems or community based treatment systems. One neat thing about this technology is that it really is scalable, it can treat at the residential home level and it can treat up to millions of gallons a day using the same technology and using sub-surface dispersal. The main point about a decentralized wastewater treatment system is that it treats the wastewater close to the source and disperses it to be close to the source, as well.

These are all good advantages. The fact that EPA supports their use and, in fact, has since 1997, when in one of their reports to Congress they indicated that decentralized or onsite systems were improperly cited in all of the disclaimers, are a permanent part of our nation's infrastructure.

In point of fact there are thousands of nonresidential decentralized wastewater treatment systems that are installed and oddly enough probably more than half of those that are in existence don't exist in the United States. In part, that's probably due to the fact that with regulation and

permitting in other countries it's sometimes easier than it can be in this country, where you have 50 states and sometimes even local levels that are all involved in the process, making it much more difficult to get these installed.

I think, most importantly, decentralized wastewater treatment fits very well with the holistic watershed approach that just about every leader in the water community has endorsed and embraced as the future for our nation's water. This holistic approach looks at the watershed from the triple bottom line of economic, social, and its societal and environmental benefits, and looks at water from the perspective of not wastewater, storm water, and drinking water all in sort of separate silos, but looking at managing that resource collectively. Centralized treatment fits very well into that because it's modular technology that can fit very well into the environment in which it is implemented.

And so this is a technology that has a ton of things going for it. The thing that I've never really been able to understand fully is that despite all these advantages our industry is really the redheaded stepchild of the water industry generally. We don't really get a lot of support from EPA and for funding and because of the way that onsite wastewater treatment evolved it's really evolved from the local level and the state level and when the Clean Water Act was passed it really didn't address the centralized wastewater treatment and left that to the states. So, as a result, it's not as organized an industry and it's an industry that's very fragmented. It's not just decentralized in terms of where the systems are, but also in terms of how it's regulated.

Now some of the challenges and reasons why this is the case, I'm going to go into those in a little bit more detail. One of the I think the big factors is that quite frequently infrastructure decision makers just don't really understand what a decentralized treatment system is or that it may be an option for their community or for their utility or for their subdivision, shopping center, whatever happens to be.

That one of the benefits of these papers is that hopefully that message will get out a little further in that regard, but again I'm talking about developers, I'm talking about county boards of supervisors, county managers, city managers and so forth, that have a lot of other responsibilities and tend to rely on the recommendations of the engineers that they hire when they're needing to do something to their wastewater infrastructure.

There are also misconceptions regarding the effectiveness of these systems. Some of the misconceptions, quite candidly, are an overhang from the reputation that residential septic systems enjoy and really my focus on this discussion is really focused on larger systems, the commercial systems, the community systems that are out there and why those aren't being installed more.

So, but the residential septic systems reputation, it's a mixed reputation at best. There isn't a day that goes by when I don't get something from one of my news feeds that talks about and devotes maybe 20 or 30 column inches of ink to a failing septic system or a couple failing septic systems in a community, and those tend to get magnified much larger than, say, the two billion plus gallon overflows that occurred when Hurricane Sandy was taking place. So there was a little bit of a distortion there in terms of the media's perception of these two systems, they're sort of

exacerbated it, but people don't think that septic systems are as good a system as a publicly owned treatment system is, and depending on how well it's managed there may be some accuracy to that.

In addition, as you go up scale, some of the earlier projects with larger decentralized systems, the management entity that was charged with running and operating that system for whatever reason failed, and when that RME failed then the system fairly quickly thereafter also began to fail. Now there aren't a lot of examples of that, but there are enough that obviously somebody is going to be a little bit nervous about looking at these systems.

In addition, one of the other factors that has been something of an obstacle in getting more of these systems implemented around the country is, quite frankly, the role that the engineering community plays within the overall process, and they play a critical role.

One of the challenges I think is that for the most part when you have a publicly owned treatment system, a utility, and you're building a collection system and a central treatment plant, it's not quite an off-the-shelf thing and one-size-fits-all, but it's a fairly straightforward process where all of the engineering is pretty well known and you mostly need an under body of water which to discharge the treatment. Certainly, you need to engineer it so that it treats to the level that you want, but it's a fairly known process, it's a fairly straightforward process for engineers to design anything from a packaged plant up to a full-blown metropolitan wastewater treatment system.

By comparison, every decentralized wastewater treatment system is almost by definition a custom design because it has to account for the site, the water table, the qualities of the soil, essentially the space in which it's going to go into, and although that is often a much better way to approach it, particularly from an environmental perspective, it is a more complicated design.

Many professional engineers, the professional engineers are incredibly smart people that I have the utmost respect for them, but I know talking to engineers who design a lot of onsite systems that other engineers will often tell a community if they're asked to look at this centralized option or told to design one, well, yes, I can design one, but get about halfway into the process and realize that there's a whole lot that they don't know. They end up picking up the phone and they end up talking to an engineer who's done a lot of these systems to essentially save their bacon.

So it's a more difficult system to design in some ways, and so I think for some engineers that's a little bit of a challenge. In addition, engineering firms typically charge for projects they do by the overall cost of the project, their design fee is tied to that. A decentralized system typically has lower costs for design than does a publicly owned treatment work with smaller pipes going in, there's less construction, you don't have to perhaps run a pipe three, four, 10 miles out into a community, which is a very capital intensive effort. You're doing it right there onsite, so the design is lower, or the design, overall, the costs are going to be lower for that system so there's lower design fees. That can be a problem for some engineers in terms of their approach and can tend to lead toward a bias, toward recommending the more expensive system.

In addition, even when those systems are put together, engineering firms typically will put overhead on top of whatever the actual design and construction fees are when they make a

presentation to their customer, whoever that happens to be. And the overhead can sometimes distort what the true cost of the systems are.

I want to give you a very, very basic example. Let's say to do a traditional wastewater treatment plant it costs \$4 to do that and it only costs \$2 to do a decentralized plant for the same community population. And so right there \$2 versus \$4, that's 100% price differential between the two systems, but then you go ahead and you add on an overhead factor on that and say that's \$3 then the traditional system is \$7, the decentralized system is \$5, well, the difference between \$7 and \$5 is only 40%, and so in some sense the overhead that an engineering firm really has to add to it can sometimes also distort the cost and not really show the true cost savings of the system. So there are those factors that are at play, as well, within the engineering community.

In addition to that, it's very difficult to get permits in many cases. There is no clear-cut, straightforward national process for permitting large nonconforming sourced project, it's really all over the board in terms of that. Every state tends to have a somewhat different process that you need to go through in order to get permits for that, and some states there are state operating permits that are allowed, in other states it's done at the Health Department level, in other states the Department of Environmental Protection gets involved.

And in many cases you have multiple regulators who are involved with the permitting process, which makes it very, very difficult to navigate. Sometimes those regulations between those – between the different regulators will contradict one another and navigating that is time consuming and can be difficult, but also kind of leads to the other point that there often is not a clear regulatory authority for oversight of these systems. In some cases it's done by the State Environment Department, in other cases it's done by the Health Department, some of that is a factor of the size of the system, some of it is just a factor of how the rules evolve with the jurisdiction.

In addition, the entire system, whether you're talking about a publicly owned treatment plant or you're talking about an onsite system, the rules are pretty much proscriptive in terms of defining exactly what technologies can be used and what can be allowed. Decentralized systems are by definition, they're really performance based systems and the rules are not really designed to fit that, and so it's difficult sometimes to get around that because you're using technologies often within a decentralized treatment system that don't fit within the boxes that the proscriptive rules require, and so it requires extra steps in order to make the case that, yes, this will work within the requirements that the state requires. So in a lot of ways we're a square peg in a round hole when it comes to the permitting system.

There's also a challenge with onsite and decentralized systems with management, and management requirements also vary greatly by location. And sometimes the type of management that is designed is really driven by cost considerations. If you're a developer and you don't have access to sewer facilities and you're building a cluster system and you know you have to have somebody to manage that system once it's in place oftentimes you'll be logging for the lowest cost management regime that's possible versus a higher cost regime, and sometimes that, you know, means that you're leaving it off to, say, your homeowners association as opposed to requiring a utility to manage it or even a private utility to manage it.

In many cases public utilities will not manage larger decentralized systems and so the burden falls to some type of private solution. In Tennessee there are private utilities that there are a lot of decentralized systems in Tennessee, they have private utilities that do a really good job of managing the many, many cluster systems that are located across and particularly in the like suburban areas around Knoxville and Nashville, particularly. Those – but that also becomes a challenge of finding the appropriate management level for the system.

Financing is another challenge, and it's sometimes related to management, and I'll touch on that in a minute, but the Federal financing is very difficult to obtain for decentralized wastewater treatment. In each state in terms of the Clean Water State Revolving Fund manages its – how it disperses those funds, and in most states the vast, vast majority of funds go to the publicly owned utilities that are managing wastewater and very little is left over for states to use. There are other Federal sources besides the State Water Drinking Fund. The USDA has money, Section 319 money from EPA is available, Commerce Department for Community Development Block Grants has money, as well. All of those are somewhat difficult to obtain.

State and private financing options are frequently very limited and many states do not have anything set-up to finance onsite systems or decentralized systems in any way, and so the developer, the person that would like to implement a system, if they don't have a state or a federal option that they can go to, they're looking for private options and that's often going to the capital markets.

If you don't have a strong management group in place it's difficult to convince somebody who is maybe going to float a bond for a community to actually back it unless they're sure that the group that's managing the system is stable and is going to provide long-term fee, the funding stream that the private financing, private financiers need in order to say, yes, we will go ahead and issue this bond and make sure that it's going to be paid for over time. That's really more of a utility financing model than anything else, and it's just not applicable to wastewater treatment systems frequently.

And even and in some cases where there are opportunities for decentralized systems to get funding the agency that is offered the opportunity to provide the funding really doesn't have the capacity to manage and disburse the funds, and so the problems vary considerably and they vary from state to state in terms of financing, in terms of management, in terms of permitting. So that's why these are difficult systems to get into place. That doesn't mean that one shouldn't try to do so, and I think that as we go forward we're going to find more and more that it's going to become easier to get these systems in place.

A lot of groups are working on helping the industry move past these challenges in order to help those people that are making wastewater decisions, so consider decentralized systems more frequently. In fact, that's really, as I noted earlier, that's really one of the [pulls] of I think these position papers is to get the word out to those decision makers that this is a viable option and that if you are looking for such an option often it's going to be incumbent on you to require the engineering firm or the other entities that are in the chain of developing the wastewater treatment

recommendations that they have to actually look at the decentralized options as part of the range of options that they're bringing to the community for treatment.

There are a number of tools out there, there are tools that are particularly helpful in assisting smaller communities. The Water Environment Research Foundation produced a huge amount of literature over the last five to seven years that is all available on their website, and the second of the two links on this actually will get you to all the papers. But Dr. John Buchanan from the University of Tennessee produced a really neat tool that can help local communities assess the costs of what a decentralized treatment system may cost them. It actually includes both a narrative, as well as a spreadsheet for them to plug-in costs and they can actually compare different options using this tool, so it's a helpful tool for communities to move forward.

In terms of financing, I said that Federal funding is hard to get, it's not impossible to get, and in some states they do a pretty good job of actually making Federal funds available. Delaware would be a real good example of that. Within their regulations for the State Revolving Fund, the State Revolving Fund for Delaware, they have provisions for both individual and larger systems through the State Revolving Fund, and they also are doing some kind of creative things, as well.

One of the things that Delaware likes to do is to fund conservation projects through wastewater projects or other kinds of structure projects, where they have a need for some type of conservation project or management project. It could be wetlands or something like that, where if the entity that is developing the wastewater solution agrees that they will also address part of the challenge that the state has on conservation of their resources in other areas they get a much lower rate on the funds that are provided to them, typically these funds are loans, they're not grants.

In addition to the – there are other states, as well, are taking other approaches. For example, Colorado is in the process right now of evaluating how they rank non-point projects so that they're able to be funded more easily through the State Revolving Fund.

In Washington State they have three different pots of money in the Federal funds and the 319 funds are among those that they use, but they have a Infrastructure Funding Assistance Council that has – that plays a role in making the decisions in terms of making sure that some of the money goes to non-point source funds. In fact, 8% of Washington's overall funds go to nontraditional wastewater projects, not all of those are decentralized wastewater treatment, there's some storm water in there, but the vast majority of it I've been told are for wastewater projects.

In addition, to the Clean Water State Revolving Fund, in some cases Section 319 money from EPA is available, as I mentioned before there is money that can be had from Community Development Block Grants, particularly for underserved communities and communities that are particularly on the low income side, and often you can make a very strong case that you can't put a sewer in an underprivileged community and sometimes it's too far away, but if you're able to put some type of decentralized treatment in there, and I think Christl alluded to this as well, once you have some type of decentralized treatment in there then the community, itself, is actually able to attract business because there's now a place that they could put their wastewater so you

can have a Burger King or a McDonald's suddenly come in on the main road and they'll have a place where they can treat their system to something other, using something perhaps other than a septic system or a cesspool or some of the things that are out there currently.

I've heard a couple of great stories about communities in northern Alabama, I know we've talked a lot about, we mentioned Mobile, but Northern Alabama has done quite a bit in terms of putting in decentralized systems in underserved communities and the economic development and transformation that happens in those communities in terms of extra jobs and more resources into the community is amazing once they've actually got a reliable wastewater system in there.

Now the states are doing a variety of different things, and I guess the best advice is that you really need to understand what your state is doing. I mentioned that Delaware and Washington have their own funding programs and that Colorado is changing rankings on, the point rankings, the rankings for non-point projects that they're going to fund to make it easier for them to fund. Some states I've learned don't even spend all their SRF money. California just barely spends all of their money right now, they really admit that they don't do a good enough job getting out the word on availability of funds through them.

And I was at the Council of Infrastructure Funding Authority's Conference in New Orleans a couple months back and I spoke to several other states where they don't spend all their money, so some of it just requires some digging and getting out there to find out where your states, what your state is doing. In other places you've got groups that are dedicated to it. In Mississippi the Community Resource Group is the group that is actually the financial entity that disburses funds from RCAP – I forget what those initials are, but residential – Rural Community Assistance Program, I believe is what the acronym is.

And so there is – there are things happening in states, and I didn't mention every state that's there, there are other progressive states that are doing very interesting things with decentralized systems – Minnesota is a good example, Ohio has done some really innovative things, Massachusetts and Rhode Island have good programs, obviously Delaware, some other – North Carolina does, as well, but there are a lot of states that don't. And so if you're in one of those states and you're looking to promote decentralized systems there's probably a little more state work that needs to be done in those areas.

There are a number of tools for helping manage, appropriately manage decentralized systems. EPA has some excellent documents. They have their guidance manual on establishing responsible management entities to oversee decentralized systems. They have their voluntary guidelines for onsite clustered wastewater treatment systems. They have their handbook for that. The University of Minnesota is undergoing a project right now which is essentially going to be a community septic system owners guide, but it's, as I understand it, it's going to be a customized tool that really any community will be able to use to take the unique factors in their community and kind of overlay them against the costs and the needs and come up with what hopefully will be another tool that will help them make the best choice for wastewater treatment within their community.

NOWRA has launched a new website recently, and we have combined a number of the tools for community and commercial wastewater treatment all in one place from a variety of different sources, and I'd encourage you to take a look at that because there's a lot of helpful information in there, as well.

One of the things that is happening to educate the engineering community will take place at WEFTEC next year, the Water Environment Federation and NOWRA are jointly going to be hosting a workshop on decentralized systems, and our focus for that is really to get out and begin to educate the engineering community, the utility managers on decentralized systems, and it's not so much going to be focused on technology, but really focused on some of the issues that I referred to here on permitting and management and financing of these systems and how to make that work, and hopefully it'll be an iterative thing that will be really the first step in what will be probably a much longer process on working with the engineering community to get them more comfortable with using decentralized systems.

Quite frankly, the other factor that's going to get the engineering community moving on this is simple economics. There is already a ton of infrastructure out there that where there's a huge funding gap. I'm sure most of you have heard the numbers, I'm not going to repeat them here, and that's for existing infrastructure. So trying to extend the pipe out, infinitely out to places where it doesn't occur now, or even adding new plants and adding additional capacity using traditional means is becoming more and more cost prohibitive, so sheer economics are going to be driving more and more people I think to decentralized solutions.

I would encourage anyone who has not done so to visit the WERF site. I did put the link up earlier and it'll be up on this as it's archived. But there it's the [centralizedwater.org](http://centralizedwater.org) is the main site to go for that, and there are a ton of very, very useful resources on there to help individuals who may be interested in implementing or managing decentralized systems.

So, with that, I will say thank you for your time and happy to entertain any questions from the audience.

Maureen Tooke: Okay, thank you, Eric and Christl, both.

I'm just going to kind of begin a little wrap-up here. There are some really great comments and examples that were given today, and overall I think the take home, one of the messages to take home is that the last counts we had that approximately 26 million people in this country are served by a decentralized system, that's not a small amount of people. Our population is not getting smaller. As we grow and our economy continues to shrink, that we need to be innovative, we need to work together to use decentralized systems, use our energy and land more lively, and this is a good way to do that.

And a lot of the states, as Eric indicated, are breaking down the barriers and the challenges and getting past it and creating their own funding programs and utilizing their SRF dollars for, like Ohio did very successfully, which we actually did a webinar on over a year ago and we do have that available if anyone is interested, we can share that information. They used over \$3 million



of their SRF dollars to begin to tackle the onsite wastewater management within the State of Ohio, which is phenomenal. We applaud them for their efforts on that.

As part of educating not just decision makers and engineers, EPA in November, mid-November launched the Septic Smart Homeowner Outreach Education Program, and here is the URL for that for you to go to, and I actually can show you the screen. I pulled that up here for everyone to see. We have in here the basics of septic smart, what it is to be septic smart, why do you want to, as a homeowner, maintain that, the proper care and daily activities in your home, it's not just about calling your local septic professional, it's about the things you do inside your home, not using your toilets and your sinks as a trashcan and not putting grease down the drain and things you didn't create, flushing down the toilet, things like that, being a responsible homeowner and realizing that your septic system really is the plumbing of your home, it's no different than your furnace that heats your home.

And so one of the many things we've done with this website is we have the toolbox here, on the right-hand side, if you click into that we have several products available all for download and printing, and there actually are print instructions, not just for a desktop but for professional printing. So, say, if you are running, trying to do an education campaign effort in your community you can take these, we have the specific specs for going to, say, a Kinko's or your local print, professional printing.

So what we've done here is we've created door hangers that can be used by local septic provider professionals or decentralized professionals. You can put your company's information and stamp on that and hang it on a homeowner's door. We have postcards with varying messages on those. All of these products are available in English and in Spanish. The postcards can be used by county health departments to begin to educate their homeowners about their needs, have you had your septic inspected in the last three to five years, if not, you might want to do that before you have a bigger problem that will then cost you so much more money had you maintained it much like you would your car. So there's a few different types of postcards.

We redesigned our EPA's longstanding Homeowners Guide, we have a short version which is a quad-fold, really, and the long version of the Homeowners Guide, which we in the past have gotten many requests for. It's all available online for download and printing. We are no longer providing them to be mailed out due to budgetary constraints, but that's why we designed it to be online and accessible to all, and we've had many questions and comments and articles written about this being available and how can we use it, tell me more about it, so I would encourage you to check out the website and find out more.

I think that we're going to run a poll here, Patrick, if you'd like to do that to see how many folks we actually have participating with us today? Okay, because I know some of you are in a room with maybe more than one person and to get a more accurate headcount really does help us. When on a normal day would I be able to, I, Christl and Eric, be able to talk to 100 people, especially on a day like today when the D.C. areas is a little bit on a shutdown because of the snow, depending where you're located, here in D.C. we're not seeing much, but the areas west of here are getting hit pretty hard and this allows us to still do that.

So I'd like to, again, thank the other presenters today for their contributions. All of our contact information is available on our slides. Feel free to contact me, and I can filter the questions to the presenters today. I'm not seeing any specific questions that have been asked by the audience, which I hope that means we did a great job and that you're all informed about the options of decentralized wastewater treatment. But, again, feel free to contact us for more information.

And one more little plug for the Partnership is that, specifically NEHA and SORA, the State Onsite Regulators Alliance, have the Annual Conference. It will be here in the D.C. area, actually in Arlington or for the locals that know it, Crystal City, in July, the week of the 8<sup>th</sup>, the 8<sup>th</sup> through the 11<sup>th</sup> we'll be holding that. Many of the partners participate in that and it's the State Regulators, the State Health Departments, and everyone gets together every year to talk about what's going on and new things that are happening. And if you're in the area or want to know more about it just go to [neha.org](http://neha.org) and all the information about the Conference is available there for you.

I think with that we're all finished. Thank you very much for attending today, and we look forward to any additional questions you have for us in the future, and again we'll be archiving this information and sending it out to making you aware when it's available, and the others that we have we've done in the past and more to come. In the next couple of months we'll be doing another webinar. Thank you very much. Bye-bye.