Funding Landscape-Scale Nutrient Reductions
Webinar Transcript

Welcome everyone. This is Darcy Peth with Ross Strategic. We're contractors to EPA. And this is part of the Innovative Financing Strategies for Reducing Nutrients webinar series. The webinar series is co-hosted by USDA, along with EPA's Water, Infrastructure, and Resiliency Finance Center. And we are going to go ahead and get started with our topic for today, which is Funding Landscape-Scale Nutrient Solutions. Thanks for joining. I'm going to walk us through our agenda for today. First, I want to let everyone know that we are recording the webinar today. The recording will be posted online within a couple of weeks, along with a downloadable PDF of the slides.

So we're going to start off with our welcome and agenda overview here, we will then show a slide letting you all know how you can participate in the webinar to orient everyone to the Zoom interface if you're not familiar. Then hand over to someone from EPA and USDA who will tell a little bit about this series, this four part webinar series. We'll then have a couple of opening polls where you can all have a chance to tell us a little bit about yourself. Then we're going to have two feature presentations, Adam Kiel and Jason Keppler. We'll have time after each presentation for Q&A. And if time allows, we'll also have time for open Q&A at the end. And then at the top of the next hour, we will adjourn.

So how to participate in this webinar, if you look down at the bottom of your Zoom interface, there is a Q&A window there. You see that little Q&A button? That'll allow you to ask questions to the hosts and the panelists. We will read your question out loud, time permitting, during the Q&A portion after each speaker's presentation. If you have technical issues or any questions related to connecting to the webinar, please click on the chat option in the toolbar and that will send a chat option into the [INAUDIBLE] message to the webinar host. And we do ask that your questions related to the topic and the content, please put those in the Q&A box, not the chat box because that does help us just make sure that your question doesn't get lost and so we can get it properly sent up in the queue.

And again, I'm going to say this one more time since we do get this question a lot, we are recording the webinar and that recording will be posted along with a downloadable PDF of the slides on the web within a couple of weeks. So you can expect to see that. And finally, the views of the speakers today are their own and do not necessarily reflect that of the federal government. Any mention of commercial enterprise products or publications does not necessarily mean that EPA or USDA endorses them. OK. Now I'm going to hand over to Ellen Tarquinio at EPA to talk about the webinar series. Ellen?

Thanks Darcy. Thank you all for joining us and really excited to hear the presentations today. This is the third of a four-part webinar series that really features case studies of successful approaches from all around the country to reduce nutrients. We had one on July 10th. We're having one on July 10th focusing on, again, the topic of Landscape-Scale Nutrient Reductions. And then we'll have one July 24th on Stormwater Financing Solutions for Nutrient Reductions. If you have any questions about the webinar series, again, there's the email address. Feel free to send us a question on it. And as you've heard, I'll say this for the third time, all these webinars

will be up on our website and USDA. And really looking forward to all the feedback that we get from you all. Kate?

All right. Hey everybody. Hey, this is Kate Zook with USDA, the Office of Energy and Environmental Policy, and I just wanted to thank everybody for joining and to thank our panelists. Certainly, nutrients and waterways is a big issue and you don't have to look any farther than the beaches in Mississippi to understand that right now. And it's been fun working with the EPA to host the series and to really focus on ways to provide some financial solutions to how to tackle these problems. So thanks everybody and hope we have a really great series of presentations and discussion today.

Great. Thanks both. OK. I'm going to kick off first of our two polls. So here, you can select the option that best describes what type of organization you're from. Utility, local government, state government, federal government, nongovernmental, agricultural, or other. I'm going to launch this now and you can go ahead to select your option. Hey, thanks to those of you who have voted. I'll leave it up for just another second. Question came in, public university. I think you can select nongovernmental and chat in from a public university. Thanks for that. OK. I'm going to go ahead and close this poll and share the results with you all.

Looks like state government is our most popular response with 31%. Then we've got 18% non-governmental, 16% federal, 11% local government, not utility, 5% utility, 2% agricultural organization, and 17% other. Thanks very much to everyone for participating in that poll. I'm now going to launch our second poll. What's your experience with our topic today? Your experience or familiarity with financing for nutrient reduction? So select the option that best describes you. We'll give this a minute. I'll give just a few more seconds for those of you who haven't voted yet to have a chance. OK. Thank you very much for participating in the poll. We'll share these results.

Looks we've got a pretty widely even distribution here. I think this would make a pretty lovely bell curve if we were to graph it. So we've got 24% said familiar but would like to learn more and close behind at 22% is no experience, then almost dead even with that, 21% have some nutrient reduction issues or projects and looking for additional funding or financing, and then just behind at 17% is do not have immediate product to fund but interested to learn more, and at 16% funded one or more nutrient reduction projects in the past. All right. Thanks very much for participating in the polls.

OK. And with that, we are going to begin our feature presentations today. Our first presenter is going to be Adam Kiel. Adam is the Operations Manager of Water Resources with the Iowa Soybean Association. Kiel provides leadership, operational support, and staff management for diverse water resource watershed planning and environmental projects. He works closely with farmer groups and watersheds across Iowa to focus on improving resource conservation, environmental performance, and profitability. Prior to joining ISA in 2013, Kiel worked eight years for the Iowa Department of Natural Resources and served as an adjunct professor for Drake University's Environmental Science and Policy Department from 2006 to 2013. I will hand it over to you now. Adam, go ahead.

All right. Thank you very much for the opportunity to talk to everyone today. It's great to be sharing some experiences from Iowa that are hopefully, maybe some of these are transferable to other states, other use cases, and really appreciate the interest from looks like quite a number of people. You can go to the next slide. First, a little bit about the Iowa Soybean Association. There wasn't huge ag representation on this webinar but hopefully, we can get more ag groups interested over time. The Iowa Soybean Association, we're located in Ankeny, Iowa and we work on behalf of farmers across Iowa. We're governed by a board of farmer directors and we utilize funding from the soybean checkoff in Iowa, and we leverage that with other outside funding to do projects that lie at the nexus of productivity, profitability, and sustainability. You can see that's in our mission up top.

In the environmental programs and services team at ISA, we have a group of 10 individuals who are planners, scientists, engineers, certified crop advisors, field staff, and others. Our legacy has focused on soil and water conservation within environmental programs. But we have an emerging focus on economics, both at the farm and the watershed scale, and specifically, driving ways to bring additional investment into outcomes that farms can generate that we're all interested in. Next slide, please. So I'm gonna talk about six topic areas very quickly, I know we only have a short time today. But I've got a mix of the top two items here are things that motivate individuals to change. We're going to highlight one quick kind of public financing option and then dive into a couple two or three private funding options that may drive investment in water quality improvement.

I just want to mention that Iowa, like many states, is looking at significant needs as far as improving water quality. Numbers in Iowa have been thrown around in the $2 to $4 billion range. No single one of these topics that I'm going to talk about will solve the entirety of the issue. But hopefully, put together, we can start to head down a path where we can achieve nutrient reductions at scale. Next slide, please. So first, talking about things that motivate individuals. In Iowa Soybean Association, we have what I think is probably the largest on-farm water monitoring network across the country. This particular year, in 2019, we monitor over 500 individual sites and you can see some of those on the map on the right. These are individual farm drainage tiles that drain a particular field.

We have staff that go collect samples from these sites and or partners collect samples from these sites every two to three weeks, between April and October. And we really utilize this data and information to show how farmers are performing and how they compare to others, and we make recommendations on what they should do to improve environmental performance, specifically as it relates to nitrogen and phosphorus losses through tile drainage systems. So as I mentioned, we've got a vast network of people, we make recommendations, at the end of the year, we survey those individuals to see how they've utilized those monitoring results. And quickly, in 2018, 34% of those individuals made a change to their farming operation as a result of seeing the data. 14% of those people already had good results, so no changes were needed. Another third said that they may make changes in the future as a result of seeing this data and additional data. And then 19% have not made any changes.

So again, this is a way that we see we can motivate individuals to make changes using their own on-farm resources to improve water quality. Next slide. I should point out I'm going through this

rather quickly. On the bottom of the slide, hopefully you're able to see that there's a link to additional information for each of these topic areas. You can reference that now or you can click those links when you get the PDF at a later date. The next one talking about quickly is transforming the way that we install drainage tile systems in areas of the country that need tile drainage systems to maximize crop production. In much of Iowa, this is a necessary tool to lower the water table to promote good crop growth. Traditionally, those systems have been installed in a way that's not at all controllable by the farmer, meaning that the outlet has no on or off switch per se. We're looking at new ways of installing drainage systems that could increase environmental performance and agronomic performance at the same time.

One of those on the left side of screen is capturing the drainage water and using that to irrigate crops. And although irrigation isn't a necessary thing in Iowa, there are times during the growing season where a few inches of water would really increase yields on crops as well as capturing that draining water and prevent it from going downstream. Additionally, there's other practices that could be added on to the end of drainage systems, such as saturated buffers, which treat water and improve water quality, as well as just the simple management of the water level within the field. So these are ways that we can motivate farmers to invest their own dollars in advanced drainage systems that have both agronomic and environmental benefits. Next slide.

This falls in the realm of public financing and leveraging SRF investments at the state and federal level to increase investment in non-point source projects. This was an area that we, Iowa Soybean Association, worked with a few municipalities in Iowa to develop watershed plans which leveraged SRF loans and specifically, the sponsored project tools that Iowa Department of Natural Resources and the Iowa Finance Authority have allowed users of SRS to do. And through a sponsored program, the SRF loan is adjusted, the interest rate is adjusted, which frees up capital to be invested in non-point source practices. So on the left bar, there you can see a traditional loan with principal and interest. A loan with a sponsored project there, the interest is sliced in half in this case. And that cost savings from reduced interest payments can be used to fund non-point source practices in the watershed.

So it's basically two projects for the price of one. And the Iowa SRF Program has a capacity of about $10 million per year to lower these interest rates and free up capital for the non-point source funding. Iowa is one of probably a handful of states that have this sponsorship opportunity with the SRF program. So there may be opportunities for other states to utilize this. It does require some legislative action which Iowa did a few years ago and has freed up many millions of dollars for these non-point source projects across the state. Next slide.

Now we're moving into the realm of private capital and this is a topic that's been discussed many, many times. Many different used cases is how do we in the environmental field working on water quality specifically, access the billions of dollars of private capital that are looking for green investments across the country and around the world? Much of what we've done in the conservation space in Iowa and across the country is relied on grants and cost share and incentives to cause change on the landscape. For example, giving farmers 50% cost share to do an action on their farm which hopefully results in environmental outcomes. We're trying to pilot something that flips that on its head and brings in some of this private capital that's looking for

investable projects. We're calling this Pay for Success because much of the payment is triggered by successful outcomes of implementing things, in our case, on farms.

This is kind of an emerging tool and has been talked about in the previous webinars as part of this series, specifically I believe the environmental impact bond concept. We're trying to do something similar in ag, however, it will look a bit different. In this case, we'll leverage investment capital. And this could be SRF loans, this could be private capital, it could be many different sources of dollars coming into a service provider who then distributes those funds to farmers to do things on farms, to implement best management practices. Those best management practices are monitored and the outcomes are verified, and those environmental benefits are then granted to or given to payers who have pre-agreed to pay for those outcomes. And once those outcomes are verified and delivered to them, they will trigger payment for those outcomes which could be a pound of nitrogen, it could be a ton of carbon, it could be a pound of phosphorus.

Whatever those payers are and whatever they're interested in paying for, they would return that at a pre-agreed price to the service provider which then can repay the capital investment. That's kind of a revolving fund with a repayment option. We're going to be piloting something in Iowa that deploys this kind of transaction in the next few months to a year, and we're pretty excited about where this could go as it is a possible way to leverage, as I mentioned, the private capital that is looking for projects to invest in. The key to this whole thing working out is in the water quality field, we need to look at and quantify all the benefits that are resulting from the implementation of on-farm conservation practices, not just water quality. There's climate benefits, there's habitat benefits, working to quantify those and stack together payers is key to this whole project, as well as getting some regulatory involvement from regulators because there is a component of this that could resemble water quality trading.

Next slide. In Iowa, the Iowa Department of Agriculture and Land Stewardship is piloting a three-year demonstration project to see if a discount on crop insurance is a driver for cover crop implementation or continuation of implementing cover crops. What is occurring here is the state is investing money in the USDA Risk Management Agency and farmers apply to receive the discount once they've planted their cover crops, and the farmers then receive a $5 discount on their next year's crop insurance premium. Typically, cover crop cost share rates in Iowa are $15 at the minimum, likely in the $25 range, and even higher for USDA programs. So $5 per acre is a pretty reasonable cost or incentive to get farmers to, like I said, either adopt or continuing practices. And this may be a way to be a transition from a couple of years of cost share to something that's a little less of a burden on taxpayers.

In the first year in Iowa, this program implemented 135,000 acres of cover crops and worked with 700 farmers in the state. Next slide, please. And lastly, I realize I'm going through this quickly but I want to leave time for questions, fertilizer sales assessments. In Iowa, the Iowa Soybean Association helps manage what's called the Agriculture's Clean Water Alliance, which is a group of ag retailers in the Raccoon and the Des Moines River watersheds in Iowa. And those retailers in those watersheds contribute $0.001 per pound of nitrogen sold in these watersheds to support the alliance. It doesn't amount to a huge amount of dollars per year but it is in the hundreds of thousands of dollars to give you an idea of the scale of the watershed and the amount of nitrogen sold.

What these ag retailers have decided to do with those dollars, historically it focused much on monitoring water and there's an extensive stream monitoring network. But what they're doing over the past couple of years is incentivizing retailer staff in these watersheds to interact with farmers and attempt to sell them on conservation. Retailer staff are oftentimes the most trusted resource for farmers so getting them to talk about conservation in addition to talking about selling products is a way to get a trusted person into a farm and talk about implementing conservation. So the proceeds from that sales assessment, now a portion of those goes to an incentive program. So if a retailer staff talks a farmer into implementing cover crops or constructing a bioreactor or some conservation practice, that retailer staff person gets a financial incentive paid to them that is funded by this fertilizer sales assessment.

So that was a quick rundown of six different tools that are being utilized in Iowa to work on the landscape scale to improve water quality and other environmental conditions. Again, quick run through. My contact information is on the screen. Feel free to email or call if you have any additional questions. There's hopefully a little time for questions now but additional questions unanswered, feel free to reach out.

Great. Thanks very much Adam for that great presentation. We do have a couple of minutes here and we've had several of you who have typed in your questions, so appreciate that and I hope we'll be able to get to all the ones that have already been typed in before we transition to our next presentation. So first, going back to a question came in early on in your presentation, how do you define your desire cost parameters on nutrient reduction? For example, on water purification. Is it cost per acre foot? And what are the numbers?

Yeah. I might have to have that person follow up with me individually to get more information about the questions so I fully understand what's being asked. Typically, how we're working it on the farm is dollars per pound reduced of the pollutants. Or whether that's nitrogen or phosphorus or dollars per ton of carbon is how we're starting to look at some of the greenhouse gases in an associated [INAUDIBLE] back to the cost of doing an intervention on the farm and going about it that way. But I'd ask the person to reach out or give me a call so I can answer the question if I didn't answer it accordingly.

Great. Thank you. Next, has the extra wet spring this year impacted the sampling schedule that was described?

No. We did get started on schedule and we usually are able to get started in April. The only challenges is that many of the outlets that we monitor might be submerged under high stream or river flows. So it does present some challenges but we still make an effort to go out there and collect data as best we can. We do even go out when it's in a drought period. No tile flow equals no nutrient loss so it's important to go out there in all conditions and monitor the best we can.

OK. Thank you. Next, for the reduction and crop insurance payment, could those producers also get USDA dollars to incentivize the cover crop planting? Was it a layered incentive?

There are some things that can be layered there and there's some things that can't. The link on the bottom of the screen on that slide which maybe you captured at that point in time, but if not, you

can get to it later. It does show what can be stacked and what can't. One thing I would add to that that I forgot to mention is, it's my hope that we can show RMA, Risk Management Agency, that by planting cover crops, it reduces risk. And I think there's some data being collected about the participants to see if that is true, which hopefully would result in being able to do away with the state-funded subsidy at some point in time. So that's one comment that I forgot to mention during the presentation.

And just a housekeeping note, one person mentioned that it was difficult to see the links at the bottom of the slide because the zoom toolbar, I think, was covering it. So what we can do is we'll send out around a list of those links so that you don't necessarily have to wait until the presentation gets posted so you can see those. Next, regarding the pay for success slide, two questions. First one is, private capital investors normally look for projects of large scale. So do you have to aggregate farms to meet investor size thresholds? That's the first question.

Yup. That's accurate. We're looking at getting projects bundled in the $5 million range. We think that that's probably a good place to start with more of a loan or the investment type of option where they want a minimal return. We're also looking at establishing a smaller scale revolving fund which would help us pilot something. So that that would not require repayment to an investor, which I think we could do some smaller scale projects just to prove out the concept first. But you're correct, there's a need to have large scale multi-million dollar projects in order to attract the investment capital. And the landscape, that's a challenge for us to put together that scale of projects but it's something that we need to work towards.

And second part of the question was, can you clarify which funding sources are used to reimburse investors when the projects they fund are certified as successful?

Yeah. So that's probably referencing the payer category, so who's going to pay for the benefits or the outcomes that we're generating. We're working with downstream water users, we're also working with supply chain companies. We hope to enter into working with biofuels industry. So there's a multitude of payers and that's going to be the key if anybody else is trying this, is to get as many payers as you can put together to make a cash flow. What we've found is just going at it with one individual repayer, it was tough to make the financials work out in our favor. But bundling those benefits and then bundling the payers was a way to make the financials work out.

OK. And this is going to be the last question before we move on. So question is in terms of tracking where funding is being allocated, are you tracking where the various sources of funding are going on the landscape? Specifically, how do you ensure you're not double counting acres that are enrolled in various funding programs?

Yup. That is a challenge across the board and this was probably a question about all of the topic areas that I presented. There's got to be some trust, some reliance on doing due diligence by whoever is granting the dollars through whatever means to ensure that there's not double-counting. And hopefully, there's checks in place to do that. With the programs that we administer, many times it's private dollars. So bundling that with public cost share is sometimes not an issue but we do try to tackle that the best we can and ask the appropriate questions about

other funding sources that are being used on farms so we fully understand the scope of what capital is being used.

Great. Thanks to those of you who typed in questions and thank you Adam for the presentation and the thoughtful responses. If there's time allowing, we will come back around to the questions we didn't have time to answer later on. But for now, we're going to move on. Our next speaker is Jason Keppler who is currently the Watershed Implementation Program Manager for the Maryland Department of Agriculture. He has over 20 years experience in agricultural conservation program delivery and currently oversees the implementation of the agricultural sector's responsibilities under the Chesapeake Bay TMDL. In addition, he manages the planning, coordination, budgeting, and implementation of research activities associated with the evaluation of new innovative technologies related to environmental improvements on agricultural land.

He also provides oversight and direction to both the Maryland Agricultural Certainty and Ecosystem Markets programs and is currently the chair of the Chesapeake Bay Program Agricultural Work Group. Thanks very much Jason. I will hand over to you.

Well, thank you very much for the opportunity to give a briefing today on the conservation programs that we're implementing here in the state of Maryland, more specifically as it relates to the agricultural sector. Generally, we have a number of different strategies in terms of our financing of conservation on agricultural land. Obviously we try to leverage our federal funds as much as we can. We solicit general obligation bonds through our legislative process. We have state revolving loans, we have special programs such as our Bay Restoration Fund and Chesapeake and Atlantic Coastal Bays Trust Fund that I'll get into more, specifically. And we also leverage our partnerships within industry to provide a public private partnership.

Real quick, If I could, I'd like to take a step back and talk about where we came from and where we're heading in terms of conservation in Maryland. So obviously, we are nestled really in the heart of the Chesapeake Bay watershed. There are only two small slivers on either end of our state that do not drain into the Chesapeake Bay. So the Chesapeake Bay is a critical resource for us and we are doing everything in our power to ensure that it's restored to an acceptable condition. Significant progress has been made over the years. It was recognized back in the early 80s that there was a water quality improvement. A Bay agreement was signed among three major states: Maryland, Pennsylvania, and Virginia, to essentially put forth a plan to clean up the Chesapeake. And over time, that's evolved more requirements and more pieces have been added to those agreements.

Ultimately, in 2008, a TMDL was established by EPA that required all of the states that drain into the Chesapeake to develop a plan that will reduce nutrients and sediment appropriately by 2025. So we're talking anywhere from the upper state of New York down to the tide waters of Virginia, over from Delaware out to West Virginia, and obviously, we're in the middle there, as well as Pennsylvania. So this has been a huge undertaking for us. Again, the TMDL took place in 2008. Each of the states were required to develop a Watershed Implementation Plan, or WIP as it's known, to address those loads out to 2025 primarily from four main source sectors of pollution: wastewater treatment plants, urban stormwater runoff, septic systems, and agriculture.

So while my presentation really is focused on agriculture in Maryland, each of the states have a responsibility to develop a plan to reduce the loads from each of those sectors out to 2025.

We just finished a midpoint assessment and we are working on our final, what's called the Phase Three Plan, that we are in the process of submitting to EPA that will carry us out the 2025. In Maryland, I would say that we consider ourselves leaders in terms of conservation within the agricultural community. We've been at this for quite some time. We have an approximately 1.3 million acres of crop land throughout the state. The vast majority, over 100,000 of that, are being managed through conservation plans. Almost the same number of acres are being managed through a conservation tillage so we have a core number of practices that have been implemented and continue to be implemented since the early 80s on agricultural land. In addition, we have some strong cost share programs and I'll talk about those in a minute. Those are only made possible due to a strong conservation partnership that we have among the USDA Natural Resources Conservation Service, the Farm Service Agency, MDA, the Maryland Department of Agriculture, our county conservation districts, and local extension offices.

So it's really a combination in terms of getting conservation on the ground. So let's talk about some of the major funding sources that we have. If I can go to the next slide. So the first big one is our Bay Restoration Fund. This was established back in 2004 and we affectionately referred to it as the Flush Fee. Everyone is responsible for paying into this fund and you can see here that it's really broken out into two main sectors. The wastewater treatment plant fund, basically anybody that has served on a wastewater treatment plant has to pay $5 per month into that. And then there's commercial and industrial users also pay into that on an equivalent basis. So this generates over $100 million per year to the state of Maryland that is primarily used to upgrade the wastewater treatment plants.

So this is how the wastewater treatment plants are able to achieve, essentially, the enhanced nutrient reduction capabilities in each of our major wastewater treatment plants. Of the majors, I think all but two major wastewater treatment plants have been upgraded to ENR and the other two are coming online this year. The money moving forward obviously will help upgrade the minor treatment plants that we have throughout the state. The other pot of money comes from our septic system or on-site disposal system. So each household that is served on a septic system are required to pay a $60 fee annually. So that brings in $27 million per year that is then split between septic system upgrades to encourage the use of best available technologies and then 40% are actually carved off and used to help support our cover crop program. And I'll talk about more of that in a minute. So go to the next slide.

The other major source of funding for us is this Chesapeake and Atlantic Coastal Bays Trust Fund. And here's a breakout of the money that comes in primarily through a portion of the gasoline sales tax as well as a rental car tax. So to date, $453 million have been brought in to help with non-point source pollution as it relates to the Chesapeake Bay. When we go to the next slide, I'll show you how those monies are broken out. So there's obviously, if we go through down through the list, there's certain administrative costs that the state has to bear in order to implement this. We offer some research in innovative technology monies to the tune of $2.6 million annually. In terms of implementation, technical assistance on the ground, this is actually

providing the boots on the ground to help us in our conservation district offices, as well as with our partners over at the Department of Environment and Natural Resources.

So about $10 million of that annually goes to the people that need to implement the programs. The other half of our cover crop program, in addition to the 40% that's covered through the Flush Tax, is actually through the trust fund. So an additional $11.2 million comes from that for our cover crop program. We also provide some CREP enhancement payments and I'll explain a little bit more of that in a minute. $2 million goes into our flagship cost share program called the MACS Program that I'll talk about. We have a manure transport program that I'll also talk about. So 3/4 of a million goes to that. And then we have about 200,000 that actually helps us with our nutrient management implementation in Maryland.

The $23 million, or actually about $29 if you include the natural filters, are all then used for competitive grants. So our Department of Natural Resources solicits RFP annually to nongovernmental organizations and other folks to essentially compete for this money to implement conservation on the ground. And this is not just related to agriculture, it's for any type of project that would help the Bay. Next slide. Let's talk about where all this money goes and how we distribute this money to get conservation on the ground. So I talked about our MACS Program, the Maryland Agricultural Water Quality Cost Share program. This is our flagship program that was established back in '82 that helps provide grants to farmers to implement practices.

Over 30 of our conservation practices are eligible for MACS cost share, up to 87.5% percent of the eligible costs. So we leverage our federal partners' money in terms of equip and other programs to provide the 87.5%. Again, the money that comes from this is primarily through government general obligation bonds to the tune of $6 to $8 million annually. $2 million comes from that trust fund money. Again, it's a great program for us, we're able to implement a lot of conservation on the ground. We have an agreement process where obviously farmers who enter into agreements with us for this money have to maintain those practices for a period of time and we do periodic spot checks. Next slide, please.

Our Maryland Cover Crop Program has really taken off over the years as a result of both the influx of money from the Bay Restoration Fund as well as the trust fund. So we have approximately $22.5 million every year to implement a cover crop program. And for folks that may not know what a cover crop is, it's a small grain that's planted following the harvest of corn or soybeans or other row crops in the summer that are essentially used to grow throughout the winter to uptake any excess nutrients that may be left on the landscape, but it also provides cover on the land to prevent soil erosion. So we provide cost share payments up to $75 per acre to plant cover crops on these fields. In 2017, almost 560,000 acres of 1.3 million acres were planted in the cover crops. So about half of our land was planted in the cover crop, so it's a great program for us in terms of water quality benefits.

Next. I mentioned our Conservation Reserve Enhancement Program. So obviously, folks are familiar with the CREP program on the federal side. We also, through our trust fund, provide incentive payments to encourage the adoption of CREP-related practices, such as streamside buffers, wetlands, retirement of highly erodible lands, and creation of wildlife habitat. So we

offer a one time signing bonus of $250 per acre and we also provide some attractive annual rental rates incentive payments for that. Our goal is to hit 100,000 acres by 2025. Next. We have a Manure Transport Program which may be somewhat unique here in Maryland. For folks that may not be familiar, we have a large poultry industry, broiler industry, on our lower eastern shore of Maryland. So there is a lot of poultry litter that is produced on an annual basis in the lower four counties.

To help support the transportation of that manure out of that area that has become enriched with phosphorus, we provide up to $20 per ton to transport that manure off of those lower four counties to other areas of the state that can use it. And we can also transport that manure for alternative uses. It's important to note that this is a public private partnership, where the poultry industry actually contributes 50% of those transportation costs to help support the program. As in FY17, about $1.1 million were spent in state funds and the poultry industry matched 450,000. It's also important to note that it's not strictly a transport program for poultry litter, we actually do provide transportation costs for dairy manure too that obviously is not matched by the poultry industry.

So about 240,000 tons of manure were transported in 2017 to give you an idea. Next slide. To support the Manure Transport Program, we have a manure matching service where we try to match up farmers that have access to manure with farmers nearby that could use those manures. This services is free that really is intended to support the manure transport program. Next slide. We also provide an income tax subtraction for state income tax for the purchase of conservation equipment. There's a number of different pieces of equipment that are authorized under this, whether it's conservation tillage or vertical tillage type equipment, manure spreading and injection equipment, also precision agriculture type equipment such as GPS optical sensing, nutrient applicators, and the like.

All of the equipment must be retained for at least three years. Following the tax year, the subtraction is taken. So this is yet another incentive to farmers to encourage conservation on the landscape. Next slide. For folks that may need to take out loans for that additional 12.5% of cost share to implement some of these projects, we offer this low interest loan for agricultural conservation, LILAC for short, to help bridge the cost share gap for those. This is supported through our state revolving loan fund and obviously, the loans are typically offered a few percentage points below market rates and are available to all lending institutions statewide. Next slide.

We also have a cost share program that encourages the injection of manure. So it helps with the reducing of odors and complaints from neighbors, but it also reduces the amount of nitrogen that's volitilized in the atmosphere. So we do have another cost share program up to $45 an acre to encourage the injection of manure if you need to hire a custom applicator to do that. Next slide. So of the small portion of trust fund money that we use to encourage innovation, we have an annual request for proposal for the demonstration of innovative technologies for manure management. So if there are interested parties that want to try to adopt other new types of technologies to manage manure, we do offer this grant program to help out with that process. Next slide.

We also have a Certainty Program in Maryland that started as a result of a Conservation Innovation Grant that we received from USDA in 2012, and it was since adopted by the state legislature. Essentially, this Certainly Program provides a safe harbor to farmers. Essentially, it's a regulatory relief for any new regulation that may result from the state legislature. So this program encourages the adoption of conservation by providing that legal safe harbor. So if farms implement conservation on the ground and they show that they're doing their part to achieve water quality goals in the Chesapeake Bay, they are essentially immune from additional regulation for 10 years. Next slide.

And finally, we have a Nutrient Trading Program that is encouraging conservation and a different approach where credits could be generated and then sold on the open market for offsets in potentially the urban sector. And we are still working through this process but it's another tool in our toolbox to encourage conservation. And with that, I think that might be my last slide. I apologize for skimming over the top really quick on a lot of these programs. But I thought it was important to show that Maryland has a number of different vehicles to encourage conservation and I'd be happy to take any questions that you may have regarding any of our programs. Thank you again for the opportunity to speak today.

Thanks so much Jason. We've had several questions come in, we will get to those. And we have a few minutes so I will go ahead and read those out. First question to Jason says "Amazing progress in Maryland toward implementing conservation practices. How far has the state progressed in meeting load reduction goals? And do you have any measurable water quality improvement attributed to the Bay?"

Sure. So there's progress that has yet to be achieved. In our WIP three plan that's going to carry us out to 2025, we have a realistic and achievable strategy. And we think that we can get there. That plan was developed with our local agricultural stakeholders in each of the counties. So we feel comfortable that we'll be able to achieve those goals by 2025. The measuring stick that is being used is the Chesapeake Bay Model. So everything that we do is submitted annually in terms of progress using the number of acres of cover crops that are planted annually, the number of acres that are managed through no-till, that type of thing, those are all submitted to the Chesapeake Bay Program Office annually. And then there is a progress run, is what it's referred to. It's essentially a modeling exercise to determine whether or not certain load reductions are being met.

So that's our yardstick that we use. I can say that we have seen measurable improvements within the Chesapeake Bay outside of modeling results that water clarity does seem to be improving, we've had some restored oyster reefs in some of the local waterways, et cetera. So there are measurable results that we are seeing outside of the model.

Great. A couple people have asked, how many annual transactions are there in the nutrient trading program? And how many credits sales or how many credits are exchanging hands?

So we just, we meaning the state of Maryland, just finalized the rules associated with nutrient trading last year. So we are in the process of developing that program but we think moving forward that this will be a critical tool in helping us achieve our results by 2025.

Question about LILAC. On average how much in loans are given out through the LILAC program every year?

That's a very good question. I don't have the figures off the top of my head. But if you go to our website mda.maryland.gov, there's more information about the LILAC Program. I believe there might be an annual report that's up there that has more information about that.

Has there been any cross-training or transfer of technology with either Iowa or Great Lakes states on nutrient reduction practices and new technologies?

Absolutely. So one of the key BMPs that we intend to implement in Maryland are some of those that Adam mentioned earlier: the saturated buffers, the denitrifying bioreactors, and some of the drainage manager practices that have been developed out in the Midwest, we are currently evaluating through the Chesapeake Bay Partnership. And once those are approved to be implemented as part of our WIP, our Watershed Implementation Plan, we fully intend to leverage those. There's a lot of artificially-drained land on the eastern shore that could benefit from those practices. So yes, we are constantly looking for other types of technologies that have been developed in other parts of the country and trying to adapt those to the Chesapeake Bay watershed.

Great. Another question related to cross pollination, if you will, with other states' agriculture programs. Has Maryland looked at Iowa's Crop Insurance Discount Program for cover crops to lessen the state budget demand or other incentives to reduce the annual cost of cover crop payments?

So we're aware that that type of incentive package and we are in the process of looking for other opportunities to encourage conservation. So I think that may be a vehicle that we approach. Other things that have been suggested have been perhaps a property tax incentive for farmers or for landowners that are implementing a certain level of conservation. So yes, there's a number of things that we are looking at. But we don't have anything adopted like what Iowa has in terms of that program.

Could you give a brief explanation of your funding program septic upgrades under the on-site disposal system fund?

I'm probably not the best person to talk to about that. That is managed through our Maryland Department of the Environment. I know that they do offer incentives to landowners to implement best available technology, BAT type systems. I believe some of that money is also used to, if there's a community that's on septic and it's close to sewer systems, to actually take those communities off of septic and to connect them into wastewater treatment plants. But I would defer to the Department of the Environment, and certainly, they have a lot of information on their website. And their website is mde.maryland.gov.

Great. I'll leave time for just one or two more questions. Can you provide any more info regarding innovative technology for manure management proposals?

Sure. So there were a number of different manure treatment technologies that have been adopted by the Chesapeake Bay Program. Simple things such as the composting of manure to make the nutrients more stable, to using anaerobic digestion, gasification type systems. There's a number of different technologies that could be available for those types of projects.

Great. And I do have that it's the top of the hour. So this is going to be the last question that we're going to be able to get to, unfortunately. How much state revenue lost as the equipment subtraction tax incentive program result in annually?

I don't have a strong answer on that. Certainly, I could follow up with folks offline if they're interested in learning more about that. I don't know, honestly, what that equates to. But I can certainly dig into it for them.

Great. Well, we are at the end of our time. I want to say thank you so much to both of our presenters, Adam and Jason, as well as to everyone who attended and for your great questions. We will have the recording of this webinar, along with downloadable PDF of the slides, posted on the web within a couple of weeks. If you had questions for the presenters that didn't get a chance to get answered or if you have follow up, go ahead and you can send those questions to the presenters at their email addresses. Or if you need that contact info, feel free to contact me via Zoom and darcy.peth@rossstrategic.com. Thanks so much and I hope you all enjoy the rest of your day. And hope to see you on our fourth webinar. Goodbye.