

National Conversation on Ports with Port Stakeholders: Advancing Solutions to Support More Sustainable Ports

Slide 1:

Jayme Ballard, EPA: I will be serving as your moderator today. The focus of this webinar will be advancing solutions to support more sustainable ports. We're really excited about the session we've put together and we'll get started in a few moments, but first I wanted to review some housekeeping details.

Slide 2: Jayme Ballard

This webinar is scheduled for 120 minutes. During the presentations everyone will be on mute. If you have questions, please type them into the chat box. We recognize that we may not get to all of your questions during the scheduled time; however, we will follow up on any unanswered questions via email and post them on the website. At the conclusion of this webinar, a short survey will pop up. We ask that you take a few moments to share your thoughts. We will use them to improve our outreach efforts.

Slide 3: Dennis McLerran, EPA Region 10:

Now let's move onto the webinar itself. We'll start by hearing opening remarks from EPA Region 10 Administrator Dennis McLerran. Next we'll dive into some strategies for building a toolkit for sustainable ports, where we'll listen to experts in the industry describe some of the approaches they have taken to improve the environmental profile of ports. We'll have presentations from the Virginia Port Authority, the Environmental Defense Fund, the Port of Long Beach, Puget Sound Clean Air Agency, and the Port of Seattle. After that we'll engage in a question and answer session where we encourage you all to type in your questions and ask them to our experts on the line. And then finally, we'll conclude with some final thoughts from The Home Depot.

So let's get started. Our first speaker is Dennis McLerran. Dennis was appointed by President Obama to serve as Regional Administrator for Region 10. As RA, he oversees the implementation and enforcement of federal environmental rules and regulations in the states of Washington, Oregon, Idaho, and Alaska, including 271 tribal governments in the Pacific Northwest. Before moving to EPA, Dennis served as the executive director of the Puget Sound Clean Air Agency. Dennis?

Dennis McLerran, EPA Region 10: Good morning for those of you on the west coast and good afternoon for those in the rest of the country. I am Dennis McLerran, the Regional Administrator for EPA Region 10, and it's a pleasure to welcome folks onto this national conversation, the final one before the Advancing More Sustainable Ports Summit in April. Through these conversations we're hoping to provide a forum for exchanging ideas and information to explore how EPA can support environmentally sustainable ports. Our goal is to provide a space for some constructive dialogue, one where EPA can listen to a wide variety of voices from stakeholders including

communities, local governments, the ports, and industry, and we're trying to understand how to best address protecting public health and lowering climate impacts in and around our nation's ports.

Our first national conversation webinar was held on September 24, and that included discussions of port sustainability issues and activities from an industry perspective. We learned how critical seaports are to our nation's economy, trade flow, border security, jobs, and environmental stewardship, and we also were reminded that continued collaboration among diverse stakeholders, including uniform metrics and effective incentives, are key to environmental progress. The second webinar was held on January 14, and that focused on near port community impacts. During that webinar we explored the influence that ports can have on places in which they're located. We heard from community groups from across the country who have expressed the challenges and achievements they have experienced in improving public health at the local level.

Today, our theme is advancing solutions to support more sustainable ports. We'll explore key elements and tools needed to improve the environmental profile of ports. The three part webinar series, with this one being the last one, is helping us to build the foundation for dialogue at our one-day stakeholder summit coming up on April 8 in Baltimore. As you all know, ports are a gateway for U.S. trade and are critical to the economies of many cities and regions. There's been a growing emphasis on globalization and the transportation infrastructure needed to support it, coupled with a growing awareness of the environmental and economic challenges facing ports and their users and their surrounding communities. Recognizing the diversities of each port, it's important that we begin discussing what tools might assist ports in improving their environmental profiles. Today you'll hear presentations on strategies and solutions for building sustainable ports, and I've had the privilege to work directly with some of today's presenters.

Ports are really close to my heart in terms of the work we've done here on the west coast and the Pacific Northwest. While I was the executive director of the Puget Sound Clean Air Agency, I was active in engaging with west coast ports and helping them to address the air quality impacts that come with ports and goods movement activities. That work ultimately led to the development of the Northwest Ports Clean Air Strategy, which is an innovative approach to establishing a framework for ports to collaborate on reducing emissions while allowing each port to pursue unique activities that fit best with their business models. Another innovative aspect of the Northwest Ports Clean Air Strategy is that it brings together the normally competing ports of Seattle, Tacoma, and Port Metro-Vancouver (British Columbia) to discuss the issues in a regional context. The Northwest Ports Clean Air Strategy establishes short and long term goals to reduce seaport-related air emissions in the region, and the strategy marked the first such international cooperative effort in the port community. Now, as the EPA Region 10 Administrator, I remain fully committed to working with ports in support of environmental efforts. I've also now been involved in the implementation of the North American Emission Control Area to reduce emissions from oceangoing vessels, and I'm working with EPA's Office of International Affairs and the Pacific Ports Clean Air Collaborative to bring our best port practices to our partners in the Asia-Pacific region to promote sustainable ports and why they are so important to our future. Some of the folks that are on the call today have participated in a lot of that work along with me.

The insights that we gain from you and other port stakeholders will help us at EPA to identify approaches to effectively partner with ports as they develop and implement more environmentally sustainable strategies that protect public health and local communities while continuing to support the infrastructure and economic growth that's so important to the U.S. economy. As I think you may realize with so many people attending today's webinar, it will be hard to get to everybody's questions or acknowledge everybody's comments, although we will do our best. You're also welcome to submit comments and questions at any time to talkaboutports@epa.gov. More details about the summit coming up in Baltimore and our port work can be found on our EPA Ports webpage at epa.gov/otaq/ports. So again, thank you for your participation today and we look forward to engaging with you in the future and at the summit coming up in Baltimore. With that, let me turn it over to our moderator for today's webinar, Jayme Ballard.

Jayme Ballard: Thank you, Dennis, for your insightful remarks. Now let's move onto the presentations portion of our webinar.

Slide 4: Heather Wood, Virginia Port Authority

We'll start with Heather Wood. Heather serves as the Vice President of Government Affairs for the Virginia Port Authority. She is responsible for the Port of Virginia's federal and state legislative affairs and public policy initiatives, as well as the oversight of environmental programs and regulatory affairs related to the operations and the development of the Commonwealth's Marine and Intermodal Terminal Complex. Heather?

Heather Wood, Virginia Port Authority: Good afternoon, everyone, from the relatively snowy Port of Virginia. Thank you for having me on the webinar today.

Slide 5:

I'm going to speak to you a little bit today about the Port of Virginia's comprehensive air emissions inventory. For those of you that don't know a whole lot about the Port of Virginia, we are the third largest container port on the East Coast. Last year, in 2013, for the calendar year we handled just over 2.3 million TEUs.

Slide 6:

We're situated in Norfolk Harbor. The slide that you see here with the photograph shows our four container terminal facilities that make up our complex. We also have an intermodal facility up in northern Virginia called the Virginia Inland Port. We first started our air emissions inventory effort in 2005—that was our baseline inventory. We've essentially conducted an update to that inventory every three years. So, we completed the update in 2008 and then again in 2011. We will complete another one, probably this time next year, that will model the emissions from the operations for 2014. It covers operations at our four container terminals in Norfolk Harbor. They comprise about 1500 acres, and they're located within three different cities within the Hampton Roads region of Virginia.

Slide 7:

As I said, our inventory purpose in 2005 really was to establish a baseline and then to be able to monitor and document the emissions contributions to the Hampton Roads Ozone / Attainment or Maintenance Area. That's the area shown in green at the bottom of the slide. We also wanted to be able to try to forecast future air emissions based on cargo growth projections. This has also helped us to establish some goals moving forward in terms of goals that we'd like to hit in terms of reductions, and then it allows us to identify mitigation strategies for further study, and it also allows us to evaluate current strategies that we have underway.

Slide 8:

So the scope, as I've mentioned, comprises the four marine terminal facilities in Hampton Roads, and it comprises all of the operations within that basically handle cargo, so all the pollutants from each source of the various modes handling freight: oceangoing vessels (and it depends on the type or size of the oceangoing vessel); it also evaluates the ship assist tugs known as harbor craft, the cargo handling equipment that is operated on each facility, the rail moves that we make, and the over-the-road heavy duty vehicles as well. We essentially look at the emissions levels for all pollutants from each mode. So you have carbon dioxide, carbon monoxide, greenhouse gases, NOx, SOx, hydrocarbons, and then both areas of particulate matter--2.5 and 10.

Slide 9:

The model's methodology really is based on EPA's Best Practices for Mobile Sources. It uses the MOVES 2010b, at least the latest edition does. We basically look to see what updates EPA has made before we conduct the model every three years. It also uses actual engine specifications, the fuel type that goes into each of these different modes, and the operating hours and the time in each operational element. This model has been developed by our consultants at Moffatt Nichol Engineers. We call it an emissions model or emissions inventory. It also allows us to assess our operational efficiency levels based on our carbon throughput at our facilities. What that means is it takes into account, really, the number of times a container is touched on our facilities once it comes in as an import, off a vessel, and as it leaves the terminal, either by train or by truck.

Slide 10:

What I asked our modelers to do was to calculate the baseline activities, the future activity, and the resulting emissions by source. For each source or each mode we use the latest vessel and equipment type operational data. We actually go out and pull the engine specifications for both the engines on the oceangoing vessels, what we know about the harborcraft, the rail locomotives, and of course our own cargo handling equipment. We have to make some estimates on the heavy duty vehicles or the truck side of the equation, but we've done a little bit of a truck inventory within the region, and we have a pretty good idea of the average age of the truck or average range of the truck ages coming through our facilities. We model those along with the time and

mode calculations, which take into account idling of equipment, as well as equipment that is underway or maneuvering, and of course the hoteling time of oceangoing vessels. We also monitor/measure the truck and rail path data. Basically, we model the operation of these different modes as they're moving cargo through our entire air emissions or "airshed" within the region of Hampton Roads. The oceangoing vessels are modeled from three miles out as they enter the territorial sea of Virginia, as they come into Hampton Roads Harbor, and of course the movement of the cargo on the marine terminal, and then the truck and rail paths as they leave the facilities, all the way to the edge of the airshed or the attainment area. We take into account that mileage, congestion, the traffic, the routes which the trucks and rails take, and then of course we factor in the load factors as well as the emissions factors.

Slide 11:

These are our results in a nutshell. These are all pollutants and all of the modes. Our model does break it down. I can look through several pages and be able to tell what each mode contributes. This has allowed us to understand where we need to target some of our emissions reduction initiatives. Not surprisingly, the largest contributor to emissions in our port is the oceangoing vessels, the second-largest being the over-the-road trucks. This slide gives you an idea of the types of reductions that we've seen since 2008. The latest inventory is 2011, so this is over a three-year period. If I take it back to about 2005, these numbers are even higher, so we've enjoyed a very nice reduction through various programs and projects that we've implemented by improving the efficiency of our operations on the marine terminal. A lot of the things we've tried to do is make sure that we spec the cleanest available diesel engine on the market when we do have to replace our cargo handling equipment. We have worked with our oceangoing vessel partners to encourage fuel-switching. We've also worked with our open-road truckers through our green operator program to either replace or retrofit their trucks. And then we've made some operational improvements. We have on-dock rail in both our APM terminal in Portsmouth, Virginia, and our Norfolk International terminal, so we're able to load our rail boxes directly from ship to rail. It's probably about maybe 1000 feet that we have to move that box to get it from an oceangoing vessel directly onto a rail car. And we've also had policies where we've tried to use low-sulfur fuels. We've also looked at hybrid technology and really the efficient tier 3 and tier 4 engines.

Slide 12:

We use our 2040 Master Plan to anticipate what our annual container growth might look like over the next several years. We factor that into our emissions forecast as well. We forecast emissions for all pollutants in all modes through 2021, and as you can see here these are projections on top of what we have in the current year. In the next 10 years we're looking at these reductions over our 2011 numbers—these are additional reductions on top of what you've seen earlier. We do this at each of our facilities. The emissions are also broken down by facility, so we have an idea of which facilities are generating which emissions. The slide here talks about Portsmouth Marine Terminal being excluded—that facility is currently vacant and not in operation so we don't have that in the forecast at this point because we don't know what type of operation that's going to see, whether it's going to be a container operation, or perhaps a roll-on-

roll-off operation, or a bulk terminal. Once we have an idea of the direction that that facility is going to go, we'll factor that back into the forecast.

Slide 13:

As I mentioned earlier, the forecasted reductions are really due to what we see as widespread adoption of low-sulfur fuel. It will factor in the eco-requirements that are coming up towards the end of this year for oceangoing vessels. It factors in the early adoption of those low-sulfur fuels through our fuel switching program, and as I mentioned our fleet turnover to clean our engines, both on the cargo handling equipment side as well as the over-the-road truck (side). We also look at our lift rates or turn rates in loading or unloading a ship. We work as quickly as we can to try to improve those on a daily basis. We have started to implement, where we can, hybrid and electric equipment on our facilities, and then of course encouraging fleet engine replacement and turnover of our cargo handling equipment. We also have increased our rail and barge operations. Historically we've moved about 33 percent of our cargo by rail, which is one of the highest in the nation. In calendar year 2013 we actually increased that to 41 percent, so we're moving more and more by rail and have worked to expand our on-dock rail infrastructure. We also have a barge service that moves containers from our coastal location to an inland market up near Richmond. There's actually a small little port in the Port of Richmond that we began leasing in 2010, and we have a barge operation that is funded with a little bit with some assistance from MARAD, and we move both import and export containers from Richmond along the James River via barge. All of that is factored into this forecast, and the anticipated growth of those barge movements. We've also begun implementing gate automation. We have that at one of our facilities, and we're getting ready to launch it at our second facility sometime this summer. We're also considering appointment systems in there as well. We also have the benefit of one of our facilities being mostly automated, and we have a container stack automation there that is fully electric, so that's helped reduce a lot of emissions from our operations.

Slide 14:

The other thing we've done with our emissions inventory, which I think is a lot more fun, is that we're able to segregate out parts of our operations and actually develop case studies (six bullet items follow):

You just heard me talk a lot about our barge service up the James River; that's what we refer to as the James River Barge Line. I have a nice one-pager on that, that shows the air emissions reductions associated with moving that cargo by barge to Richmond as opposed to moving that same cargo to Richmond by truck or even by rail, so we're able to get some comparisons there and show some wins on each of our different elements.

Again, our Partnership with Maersk and Maersk Line Limited on fuel switching and the use of low-sulfur fuel—we've modeled a case study on that as well. Our Green Operator program, which is our truck replacement program.

Then the fourth bullet you see, which says Straddle Carrier vs. RMG Terminal Operations, that's really modeling a conventionally operated marine terminal versus a 90-percent automated and

electric facility. We get an idea of what automation brings to the table in terms of emissions reduction. This allows us to segregate this out from the bigger picture.

We also model our barge service that transits from Chesapeake Bay to Baltimore; we model that with regard to rail and truck movements as well.

We have had some benefits of some EPA funds that allowed us to replace our yard-switching locomotives. Those are gen-set locomotives, and we had one hybrid locomotive, and the case study and model allowed us to evaluate that equipment as well.

Slide 15:

That's really it for my presentation today. I really appreciate everyone's interest, and I guess we'll open the floor for questions.

Jayme Ballard: Heather, we've had a couple questions coming in and I'm just going to stick to the clarifying questions right now and answer some of the more detailed questions later. The first I have: "Are EPA's emission reductions normalized to volume or a simple total to pollutants?"

Heather Wood: We normalize them per TEU. I have emissions by TEU, but then I also have total emissions, so I can report it either way. With those reductions you see they are total by pollutant.

Jayme Ballard: Another question I have: "What makes the port suitable for increased on-dock rail?" And I think folks are referring to your increase from 33 percent to 41 percent over the course of the last few years.

Heather Wood: We actually had a little bit of space. At Norfolk International Terminals, which is our oldest facility, we had four strings of on-dock rail and we've added six to that, so we've gone from four strings to six strings. That facility is served by Norfolk Southern so we use our ultra-clean yard locomotives to build the trains, and then Norfolk Southern backs in their long-haul locomotive to carry those to their final destination. At the APM terminal, that's a newly built facility built by APM Terminals North America, and it's leased now by the Virginia Port Authority. I believe that facility has six strings of on-dock rail, and that was a new build and was planned with the new build.

Jayme Ballard: This is going to be our last clarifying, simple question: "Can you provide a ballpark estimate of the cost of doing a port inventory?"

Heather Wood: I can. Initially, your baseline inventory probably costs you the most. Your three year updates after that are a little bit less. I think the ballpark for, depending on the size of your facility, if you're like mine (15 million acres and 2.3 million TEUs), then you're probably looking at about a \$65,000 effort with your updates every 3 years after that being probably in the \$40,000 range. The first effort really is building the model.

Jayme Ballard: Thank you, Heather. Actually, we have several other questions for you, so we'll come back to those in our open-floor Q&A portion.

Heather Wood: Okay, I'll hold the line. Thank you.

Slide 16: Elena Craft, Environmental Defense Fund

Jayme Ballard: Our next speaker is Dr. Elena Craft. Elena is a health scientist at the Environmental Defense Fund where she works to identify, monitor, and mitigate risk from environmental pollution in highly industrial areas, specifically around port areas, petrochemical facilities, natural gas drilling areas, and freight corridors. Elena?

Slide 17:

Elena Craft, Environmental Defense Fund: Thank you, everyone, for joining us today to talk about advancing solutions to support more sustainable ports. I'd like to especially thank EPA for hosting this webinar as well as all of their work over the last several years on port issues. They've been hosting these national conversations with a variety of port stakeholders, as you all know. They've also been providing funds through DERA and SmartWay programs to help reduce pollution across a number of sectors at ports. I just wanted to highlight that we did see the EPA budget for fiscal year 2015, and DERA has been cut from that budget, so we will be advocating for continued relief of those funds to help support some of the many projects that have been successful at ports. One of the things that EDF has been doing over the last several years is working with ports across the country, as well as port stakeholders in the industry, to help identify best management practices. We've also been working with partners across the border, including Latin America, basically because of the growing trends in trade between the U.S. and other parts of the world. We know that ports are expanding and investing in infrastructure projects, and we believe that those trends represent new opportunities for sustainable development along these critical transportation corridors.

My background—I'm a toxicologist and health scientist with Environmental Defense Fund. I am based in our Austin, Texas office. We've been working with ports for several years, mainly concerned about air quality around ports, which we'll talk about in just a little bit. We're looking for ways to highlight some of the best mitigation practices that are being implemented at ports across the country, including like what Heather is doing in Virginia, and to encourage adoption of these best management practices at other ports that might not be implementing some of these same projects.

Slide 18:

One of the reasons for the attention on ports over the last couple of years is, as Heather mentioned, the growth that ports have seen in the last couple of years. There's been a little fluctuation based on the recession a few years ago, but on the whole there has been a steady increase across most of the sector for many years. That's primarily due to increases in population in various parts of the country as well as our increased desire for more stuff. Ports serve as a

thoroughfare for how we get all of the clothes, and electronic equipment, and everything that we use on a day-to-day basis.

Slide 19:

In addition to the general growth of container traffic, we also know that ports around the country have engaged in large expansion projects, and I just want to put a couple of photos here. Port of Houston, for instance—they hit a some records last year in terms of operating revenue. Their total tonnage was up around nine percent, I think, for the year. The Savannah Port Authority recently received four new ship-to-shore cranes, bringing the total number of electric cranes to 25, which is the most of any single terminal in the nation. The Port of Miami is investing more than \$2 billion in infrastructure improvements. They're going to have six new cruise ships. Baltimore just completed a major expansion; New York/New Jersey, all of the ports are really looking to increase throughput and to make that movement of freight as efficient and as sustainable as possible.

Slide 20:

And then of course, another factor that impacts the amount of traffic that we see at our nation's ports—I'm sure that everyone has heard of the opening of the third set of locks on the Panama Canal that's scheduled for next year, and there are a variety of estimates as to what that might do to the industry, but I think for all accounts at least the east and Gulf ports are bracing for an increase in the amount of traffic in part because of the expansion. The actual amount is up for speculation to some degree, and it won't happen overnight, but projects like this expansion are the type of thing that ports are estimating as they look to the future for the volume of goods that will be coming through the port.

Slide 21:

As I mentioned, we were talking about air emissions from ports. I wanted to put this slide up. This is actually talking about carbon emissions, but as we talk about carbon emissions, we're also talking about criteria air pollutants like ozone, particulate matter, nitrogen oxides. We can see that emissions from the freight transport sector are growing domestically. This is partly because of the increase in the amount of freight that is expected to move through the United States. By 2020, 90 million tons of freight are expected to move through the U.S. That's a 70 percent increase in just over a decade. You can imagine that with this increase in amount of freight, we get a subsequent increase in the amount of emissions. The freight sector, at least for greenhouse gases, represents about 25 percent of greenhouse gas emissions from the transportation sector as a whole. As we see emissions, say from our personal vehicles, going down, even though there are more cars on the road, we aren't seeing those same declines in terms of freight transport.

Slide 22:

I mentioned greenhouse gases. This is a map of counties across the country that violate the proposed ozone standards that we believe will be put forward later this year. As many of you

have heard, there are upcoming revisions to the national health-based standards for ozone. Scientists have recommended that the standard for ozone be strengthened to between 60 and 70 parts per billion. The current standard is 75 parts per billion. The highlighted counties shown on this map are areas where pollution concentrations would exceed the health-based limits that have been recommended by public health officials as well as by scientists. There's actually a meeting coming up at the end of this month in RTP--Research Triangle Park—of the Clean Air Scientific Advisory Committee to talk about EPA's latest review of the science on ozone, and from our perspective we think it's just a matter of time before the country adopts ozone standards that are more consistent with the science and with what most of the rest of the world has adopted in terms of health protective guidelines for ozone concentrations.

Slide 22:

This is a map of the United States showing what good policies can do to improve air quality. One of the issues regarding ports and port emissions that have come up over the years is the emissions coming from the shipping sector. That's been a tough issue to tackle, because many emissions are coming from the shipping sector, and the type of fuel that is burned on those ships is not regulated by the U.S. government or the EPA. Those are standards that are set by the International Maritime Organization. Recently, the International Maritime Organization adopted some new fuel standards that would reduce the amount of pollution coming from ships as they come within 200 nautical miles of the coastline. They've called the 200 nautical miles an "emission control area." With respect to these emission control areas, it's been modeled that we could see reductions of particulate matter, of that very fine soot of up to 2 micrograms per meter cubed. When you think about the fact that the national standard for particulate matter is around 11 micrograms per meter cubed, 2 micrograms is actually a really large reduction, especially when you consider that regions that might not meet the attainment goals for particulate matter may only be out of attainment by a microgram.

Slide 23:

We know that good policies work is the bottom line there. Another element of our work is really addressing hot spots across ports. If you look at the emission inventories that are completed, like the one that Heather mentioned, they are typically divided into different sectors of operations at ports, including ships, cargo handling equipment, rail, harborcraft, and trucks. In general, emissions from ships and trucks tend to be the greatest source of emissions at a port. In our own work we initially started out looking at how we could reduce emissions coming from those largest sectors of emissions. We looked at trying to reduce emissions coming from ships and trucks. As I mentioned, the type of fuel that's burned by these ships is regulated by the International Maritime Organization, so we thought that we might get the biggest bang for our buck by looking at emissions from trucks.

Slide 24:

What we did was, we looked at what ports across the country are doing in terms of standards to help mitigate the environmental pollution coming from that particular sector. This is a table that shows a comparison of the various truck standards that have been adopted by ports across the

country. You can see that there are varying degrees of standards in place at various ports. The reason this is important is that, as I think most of you all know, the newer engines that are in trucks today are much cleaner than they were several years ago. One of the strategies to reduce emissions from the truck sector at ports was to turn over some of those oldest vehicles. Depending upon what types of programs were being implemented at ports, they had varying timelines as to when they would try to phase out some of those oldest trucks. One thing that we wanted to highlight by looking at the truck programs being implemented across the country was that if we had these different programs with varying timelines and various degrees of implementation, then it was possible that you might end up moving environmental problems around from one port to another. We were concerned about that and wanted to address that in some way.

Slide 25:

And so, to help establish some performance benchmarks for ports and to highlight some of those initiatives that are going on at ports, we worked with EPA to expand upon one of their already successful programs known as the SmartWay program. The SmartWay program was originally designed to assist truck operators with implementation of strategies that save on fuel costs. We worked with EPA, the ports, and SmartWay partners to basically extend that program to cover trucks that operate at the ports. They have a different drive cycle, a different series of operations, and we worked with the agency and with port customers and ports to expand that program. What was special about the announcement that we made back in 2011 was that many companies committed to moving 75 percent of their freight on trucks that meet specific performance requirements outlined in the SmartWay drayage programs, or even companies like Lowe's, which committed to moving 100 percent of their freight on SmartWay trucks.

Slide 26:

Building upon the performance benchmarks that we helped to roll out for trucks in ports, we thought it was important to identify best practices across all sectors of operations at ports that could help mitigate the environmental impacts. To help do that, we had a number of conversations with ports and port stakeholders to help craft a request for proposals last summer. The purpose of this RFP was to help identify some of the best practices that we were seeing going on around ports, the idea being that we could highlight these best practices and share the best strategies with other ports. The concept is that it would be an environmental recognition program for ports. Now, the International Council on Clean Transportation (ICCT) won the RFP, and we've been working with them as well, as with an advisory committee, that has helped guide development of a series of recommendations as to how to recognize top performers at ports.

Slide 28: (skip)

Slide 29: (skip)

Slide 30: (skip)

We've engaged with ICCT and with some of the port stakeholders to essentially put together a final report of program recommendations as to how you might recognize ports that are implementing some of those best management practices. We plan to facilitate a workshop at the EPA Ports Summit in April and continue to work with stakeholders on this effort to continue to help develop the recognition program. The slides that we skipped were basically just about how this might happen in terms of recognizing that no port is the same—so there needs to be flexibility in these types of programs.

Thank you.

Slide 31:

Jayme Ballard: Thank you, Elena, I know you have a lot of great information to share. Just as a reminder to everyone, the slides will be available. We will post them on our website in about a week or so. Elena, we do have a question here—we actually have several questions—but one I'd like to ask is: "Have you done any ground-truthing in the estimated PM_{2.5} reductions since one has been implemented?" This comment comes from someone in Charleston and they indicate that the monitor in Charleston hasn't registered any discernible PM_{2.5} improvements since the first phase has kicked in.

Elena Craft: The emissions control areas are actually a series of measures that were taken. The final step of those control measures will be implemented in 2015. There isn't necessarily full realization of the benefits of the emission control areas right now, because not all of the steps have been implemented as of yet, but they're on the way.

Jayme Ballard: We have another question: "Freight movement is getting more efficient on a ton-mile basis, just as passenger transportation is getting more efficient on a ton-mile basis. Therefore, emissions from both freight and passenger transport are growing due to increased mobility. So the two modes are not moving in opposite directions; it's just that the proportion of the problem attributable to freight seems larger, right?"

Elena Craft: I think there are a couple of key points. One is that, when you're talking about freight corridors, you have this issue of congestion around ports, around railyards, around shipping lanes, and so forth. Even though as a whole the supply chain may be getting more efficient, you don't necessarily see all of those benefits, because we have some of these hot spots of congestion. It takes potentially longer to get more goods through a port. If you have a situation where you have trucks lined up, idling, waiting to get into a gate to pick up freight and whatnot, that's where you see some of these hot spots that exist.

Jayme Ballard: One more question: "How would a port recognition program work with various stakeholders in the ports, such as terminal operators, truck drivers, on-dock rail, harborcraft, etc.?"

Elena Craft: The idea behind this recognition program is really that it serves as kind of a toolkit of best practices as to what programs have been successfully implemented at ports across the country. It would be up to the individual ports to look at some of those best practices and to

adopt or implement those programs at their various ports. We also think that this is a great tool for other port stakeholders who are looking for ways to assist their ports in crafting new strategies, new initiatives, new ideas, because it provides a look at what best practices are being deployed in other places.

Jayme Ballard: Great. Thank you so much, Elena. We have a couple more questions for you that we'll get to in the open floor session.

Slide 32:

Our next speaker is Rose Siengsubcharti. Rose is a program manager for the San Pedro Bay Port's Clean Air Action Plan (CAAP) Technology Advancement Program (TAP) for the Port of Long Beach. She oversees emission reduction projects targeting oceangoing vessels, heavy-duty trucks, harborcraft, locomotives, and cargo handling equipment.

Slide 33: Rose Siengsubcharti, Technology Advancement Program, Port of Long Beach

Rose Siengsubcharti, Technology Advancement Program, Port of Long Beach: Thank you again for having me participate in this webinar series, and also thank you to EPA and to everyone on the call for joining us today. Before I begin, I'd like to start off by acknowledging the environmental staff over at the Port of Los Angeles, who are also in attendance at this webinar. The Port of Los Angeles has been our partner in virtually all of our air quality programs. In fact, the Technology Advancement Program has been a joint effort between the Port of Long Beach and the Port of Los Angeles to test emerging emission reduction technologies in the port environment.

Slide 34:

First, a little geography and statistics on the San Pedro Bay Ports, as we are commonly referred. Combined, the two ports are one of the busiest container ports in the world, and the top two busiest container ports in the United States. As you can see here, the two ports are right next door to each other, and while we are naturally business competitors, in the realm of the environment we have been strong collaborators, especially in regard to improving air quality.

Slide 35:

Heather and Elena did such a good job at covering the emissions part that I'm not even sure I need to go into this slide, but I'll go ahead and talk about it again, because it has been such a challenge for us. The information used to generate these two pie charts comes from the ports' respective 2012 emissions inventories. As Heather had mentioned in her slide presentation, we have the same five source categories of emissions as well. They include ships, trucks, trains, cargo handling equipment, and harborcraft. Criteria emissions most prevalent here at the port include diesel particulate matter, nitrogen oxides, and sulfur oxides. On the slide, the pie chart on the left depicts the average of both ports' nitrogen oxide emissions, and the pie chart on the right is for diesel particulate matter. You'll notice that I didn't include a pie chart for sulfur oxides, and that's not to say that we don't have a SOx issue—we do—but it's just that this particular

emission is attributed mostly to ships, and it would have been tough for me to add a third pie chart to the slide, so I just did the two. As you can see on the slide, ships account for most of our emissions.

Slide 36:

Both the Port of Long Beach and the Port of Los Angeles move a tremendous amount of containers. As Elena had mentioned in her presentation in that graph, the Port of Long Beach moves approximately 6 million containers and the Port of Los Angeles moves approximately 8 million containers per year. That's enough goods to fill over a thousand shopping malls wall-to-wall. So that's pretty significant because it tells you how active and busy the two ports are. Despite the recent setbacks in the economy, we still have forecasters that say we're going to still see a rise in trade. But the ports are not able to move forward with the growth and the development that we're planning unless the air quality impacts and health risks of nearby communities, especially to those who live and work there, are taken care of.

Slide 37:

The Clean Air Action Plan was created as a commitment from the two ports to reduce port-related air pollution, which includes development of specific strategic programs. The Clean Air Action Plan was implemented in 2006 with the original plan to focus on near-term emission reductions. But the ports also agreed that the plan would undergo review and update, so in 2010 the Clean Air Action Plan was updated to propose longer-term goals and health risk reduction standards. Strategic programs developed under the Clean Air Action Plan include such programs like the Clean Trucks Program, where only the cleanest Class 8 trucks, by law, are allowed into the ports. Other programs include two incentive programs for ships.

Slide 38:

A program that I'll be spending most of my time talking about is our Technology Advancement Program, or TAP, where our mission is to accelerate the verification or commercial availability of new clean technologies through evaluation and demonstration, to move towards an emissions-free port. Through the TAP we are committed to finding emission reduction technologies that can be used on any of our five source categories that are applicable to the port industry, and most importantly, that they are demonstration-ready or close to it. It is with hope that these technologies will be incorporated into future updates to our Clean Air Action Plan as either new control measures or alternatives to existing measures, or as additional mitigation options to support port growth.

Slide 39:

So the ultimate goal of the Technology Advancement Program is verification or certification by the EPA and/or the California Air Resources Board, because in order for a technology to be available on the market, it must receive this approval. The verification process can be significantly extensive. The process requires an evaluation of how well a technology can perform, and if it's durable, so that upon approval it provides the end-users with the confidence

that the technology can perform as expected. Specifically for port applications only, TAP provides an opportunity for technology providers to work with terminal operators, shipping lines, harborcraft companies, rail companies, and licensed motor carriers to test their technologies. The demonstration hours that are obtained through the TAP can be used to satisfy performance and durability hours required for verification, and the TAP believes that the more tools that we have in our toolbox and that we can help make available in the market, the better our opportunities to reduce or eliminate emissions from ports here and across the country, as well as around the world.

Slide 40:

The way that the TAP works is that we facilitate demonstration projects by not only providing a demonstration platform, but to also provide some financial support in that the TAP will provide up to 50 percent of the total project cost. You'll see in my upcoming slides, this process can be very costly to technology providers, some of which come from smaller companies. The ports receive proposals in one of three ways, but by far the unsolicited proposal route is where most of our proposals come in. Proposals are evaluated according to set criteria, much like other grant programs, and the three criteria that we look for right off the bat are: monetary or in-kind match requirements from technology providers, partnerships that are formed at the time the proposals are submitted to us, and the intent to have their technology ultimately verified or certified. With regards to partnerships, we have in the past facilitated in finding potential demonstration partners, especially if it's a technology that we want to see demonstrated or that we have interest in.

Slide 41:

Our proposals are evaluated by our Technology Advancement Program Advisory Committee members, or TAP-AC. This includes both ports, the EPA Region 9, California Resources Board, and the South Coast Air Quality Management District. The TAP-AC meets every six weeks via conference call to provide members with updates in emission reduction and even zero emission technologies. It's here where we evaluate proposals, and this is where we discuss the technology merits. Typically the decision will be made whether or not to recommend a project for funding; however, port staff will collect information, comments, and questions from other AC members on the proposal, which is then passed along and discussed with the technology provider. At that point the technology provider may choose to resubmit a revised proposal, keeping in mind what is needed.

Slide 42:

Since 2007, the Technology Advancement Program has funded over 20 demonstration projects. We currently have three projects that are in demonstration. In order to give you a better snapshot of the types of projects we've funded, I compiled all of our projects into tables according to the technology type. Looking at this slide, the first column is a list of the demonstration projects that we funded specifically for emission control technologies, the source category that it targets, the total project cost, TAP funding, and agency funding. As you can see here, we funded technology demonstrations for ships, which can be more on the expensive side. Going back to emission

control technologies, you're probably more familiar with them as after-treatment devices or the type of technology where it can capture emissions and then treat them on-site. Emission control technologies can also be an improved modification to an engine as well.

Slide 43:

Due to the rising cost of diesel fuel, there has been interest in general for alternative engines and alternative fuels such as compressed natural gas, LNG, or biodiesel. Let me start by saying that the ports have not had much luck with biodiesel, due to so-so emission reductions, and in earlier cases, we also had an issue with a rise in NOx emissions that we had to deal with. But in the past we've also funded projects like developing a certifiable LNG engine, which you can see here is pretty significant in cost. Recently there has been a big push for LNG for marine applications, which we are keeping a close eye on. In fact, the ports have attended and participated in LNG working groups and workshops. This is something that we're definitely interested in—it's just that it's relatively new to us, but we're going to keep a close eye on this.

Slide 44:

Hybrid technologies are important, and in my opinion it's almost like the initial step towards zero emissions. With regards to the projects, I think the most exciting project that we had participated in was the design and development and demonstration of Foss Maritime's Carolyn Dorothy, also known as the world's first hybrid tug. Compared to a conventional Dolphin-class tugboat, the Carolyn Dorothy's demonstration emission reduction surpassed initial expectations. ARB had initially confirmed a 73 percent reduction in diesel particulate matter and a 51 percent reduction in nitrogen oxides. This hybrid tugboat has been in operation since it was commissioned in 2009.

Slide 45:

Zero emission technologies are still considered emerging technologies in the port world. In 2011 the Zero Emissions Roadmap was jointly developed and adopted by the two ports. Our goal through that roadmap was to identify and evaluate zero emission technologies for port applications. So the TAP right now is currently working with technology providers in demonstrating zero emission trucks. One project involves the development and demonstration of seven class 8 battery electric trucks, and the other project involves retrofitting an existing class 8 truck and turning it into a plug-in hybrid electric vehicle with zero emissions mode.

Slide 46:

Updates on port technologies. Unlike the newly-built Carolyn Dorothy, which I had talked about in the last two slides, the ports and ARB worked with Foss Maritime again to this time retrofit an existing Dolphin-class tugboat with a similar hybrid system for the Campbell Foss tug, which is currently providing service. That was an important project that we had demonstrated and participated on. With regard to the DERA funding, we have been able to use DERA funds to purchase new after-treatment devices for equipment, as well as purchase new engines and new vehicles with clean engines. With regards to the port shorepower progress, the ports are currently

shorepower ready and we already have ships that are currently plugging in. Both the Port of Los Angeles and the Port of Long Beach are working on their own respective at-berth technology projects for ships.

Slide 47:

Looking ahead, we're looking to continue to demonstrate zero emission technologies, focus technology projects on ship applications, and continue to monitor for grant opportunities and to also to continue partnering with air agencies on projects.

Slide 48:

I covered a lot of information today with regards to the projects that we've demonstrated under the TAP. More information can be found in our annual report.

Slide 49:

If you have any information with regards to technologies, I've provided contact information here for staff both at the Port of Long Beach and the Port of Los Angeles. And that pretty much concludes my presentation.

Jayme Ballard: Thank you so much, Rose. We have a couple clarifying questions here. The first is: "Is TAP certification a requirement by the state, or is it voluntary?"

Rose Siengsubcharti: In order for a technology to be available on the market, it needs to have the proper verification or certification approvals from either the EPA or the ARB. Both agencies are working together with regards to the verification/certification process. Generally for verification, we work with the ARB. This verification process is something that needs to be completed in order to have a technology be available on the market. So it's required.

Jayme Ballard: We have another question: "What return on investment are you seeing for various hybrid technologies you've tried? Do they approach making the case for self-funding?"

Rose Siengsubcharti: It's really hard to say for some of the hybrid technologies that we've funded, because a lot of the technology projects that we fund—the only hybrid technology that has actually received approval from EPA and ARB is the hybrid tugboat with Foss Maritime. With regard to the other hybrid technologies that we funded through the TAP, sometimes we don't get the results that we are hoping for, but that's the whole purpose of the Technology Advancement Program, is to test out these technologies so that you can gain information and learn from them, and then use that information to perhaps build a second generation of hybrid technologies. In order to answer that question, I feel like we would need to have more information on more technologies, but being that we've only had one that we considered was successful in obtaining verification or some sort of recognition from agencies, it's really kind of hard to say. As far as I know, with Foss Maritime, what we're mostly concerned with is the emissions that they're able to reduce, and with the hybrid tugboat that we have out there working

for us, it's not only reducing emissions significantly, but it's also performing really, really well. We've never had any problems with it.

Jayme Ballard: One more question for you, Rose. On your updates on the port technologies slide you talked about at-risk technologies, and there's a question: "What at-risk technologies will you be looking more into?"

Rose Siengsubcharti: Right now we are currently working with AQMD on a project with a company called ACTI and demonstrating their AMECS system—I don't know if you've ever heard of the "sock on the stack" project, but it's something similar to that in that they'll have a technology device that will hook up to the exhaust of a ship and collect those emissions and have it be treated on site. These are for ships that are called at-berth, and that's a project that Port of Long Beach is working with AQMD on. There's another project that Port of Los Angeles is working on that is demonstrating something similar, but it's with another company. I believe this is with Clean Air Engineering. But in order to get more information on that project, you can contact any one of the Port of Los Angeles staff contacts that I provided in that last slide.

Jayme Ballard: Okay. Rose, we have a couple more questions for you but we'll get to you in the open Q&A portion of the webinar.

Slide 50: Beth Carper, Puget Sound Clean Air Agency; Stephanie Jones-Stebbins, Port of Seattle

Our final presentation is from Beth Carper at Puget Sound Clean Air Agency and Stephanie Jones-Stebbins of the Port of Seattle. Beth leads Puget Sound Clean Air Agency's diesel solutions program. Beth also works closely with the Ports of Seattle and Tacoma on port-related emissions reductions, and has played a key role in the development of the Northwest Ports Clean Air Strategy.

Stephanie is the director of Seaport's environmental and planning programs at the Port of Seattle. Her responsibilities include overseeing environmental and planning programs for the Port of Seattle Seaport. Beth? Stephanie?

Stephanie Jones-Stebbins, Port of Seattle: Thank you Jayme. This is Stephanie Jones-Stebbins with the Port of Seattle and I'm going to start out.

Slide 51:

We're going to talk about the Northwest Ports Clean Air Strategy, which is our experience with creating a plan for sustainable ports. You heard Dennis McLerran speak a little bit about it, but I'll go into a little more detail.

Slide 52:

We want to talk a little bit about the background, both the initial strategy that was adopted in 2008 and the update which was just completed—the emission reduction goals and performance measures that we've set, as well as some lessons learned from all of that work.

Slide 53:

To start out, the Northwest Ports Clean Air Strategy is a collaboration between three ports, which as Dennis mentioned earlier, three ports that are competitors. Much like the Ports of LA and Long Beach, while we compete fiercely for business, we've worked pretty well together on environmental issues, and we've set clear, measurable goals for the five main sectors that you've heard discussed by several other folks. In addition, we've also set some targets for port administration. I think of that as taking our own medicine. Most of the actions taken in other sectors are taken by our tenants or business partners or vessels who call here. The port administration is where we share the commitment. We also have a focus on pilot projects, which I think gets at some of the same things as the TAP program that Rose just described, although it's a little different in its structure. Finally, here is a link to the strategy itself, which you can look at because we will be going through things pretty quickly. (<http://bit.ly/NWPortStudy2013>)

Slide 54:

The strategy partners involved in the Northwest Port Clean Air Strategy include the three ports (Seattle, Tacoma, and Port Metro Vancouver, which is in British Columbia), as well as five regulatory agencies: the U.S. EPA, the Washington Department of Ecology, and the Puget Sound Clean Air Agency here in the U.S., and Environment Canada and Metro BC in Canada. It's been a very collaborative effort between those nine agencies. Certainly, that collaboration does also add some transaction time, but I think it's been really effective in that shared commitment.

Slide 55:

This the geographical scope of the Northwest Ports Clean Air Strategy.

Slide 56:

The approach we've taken is to keep our work very science-based and data-driven. We did an initial emissions inventory in 2005, and ours was actually considerably more expensive than Heather's, but we were looking at all of the maritime sources in Puget Sound, including several other ports, the Washington state ferries, et cetera. From that emissions inventory, we then created the first version of the Northwest Ports Clean Air Strategy. Once we knew what our emissions were, where they were coming from—what are we going to do about it? We updated our emissions inventory in 2011 in the U.S., and Canada updated theirs in 2010. Again, from that emissions inventory update, we then updated our Northwest Ports Clean Air Strategy.

Slide 57:

So this slide shows the results at Port of Seattle for emissions reductions from 2005 to 2011. We have had reductions in all of the sectors, in all of the criteria pollutants. We focused here on diesel particulate matter. We are in attainment with national ambient air quality standards; however, we have a relatively high level of diesel particulate, which creates health impacts. So

that's really our primary focus here. In addition, with the update of the Northwest Ports Clean Air Strategy, we are including a much stronger focus on greenhouse gases.

Slide 58:

These slides show how our emissions break down. As with the other ports we've talked about, the most significant part of our emissions come from oceangoing vessels, and you can see that for diesel particulate and greenhouse gases these look a little bit different. For instance, diesel particulate—only five percent of our emissions come from trucks, but for greenhouse gases it's 29 percent. With these numbers in mind, we've created our updated Northwest Ports Clean Air Strategy.

Slide 59:

We set reduction goals for both diesel particulate and greenhouse gases with this update. In the first strategy that we adopted in 2008, we really focused on performance targets, because we really didn't know how much we would be able to reduce our actual emissions so that the work we've done over the last five years really gave us the confidence to set reduction goals. We also established performance targets for further out to 2020, and updated our 2015 goals. We included a provision to focus on pilot studies and demonstration projects. Because they don't necessarily reduce emissions in the short term, we wanted to include a focus specifically on that to recognize that we need to contribute to the overall knowledge about how to reduce emissions, even when it doesn't reduce emissions in the short term. Something that's notable in a number of our targets is our focus on third-party certification programs. As we begin to focus more on efficiency efforts that get at greenhouse gases, we see third-party certification as a valuable way to do that.

Slide 60:

The emission reduction goals that we have included in the strategy update include a 75 percent reduction for diesel particulate by 2015, and 80 percent by 2020. We have selected targets based on per ton of cargo. We've done that because all the reports have different growth rates, and in order to agree on common numbers, we really needed to do it by ton of cargo. However, certainly at the Port of Seattle, we are focused on overall reduction of emissions. With the greenhouse gases we have goals of 10 and 15 percent reductions per ton of cargo. Those are aligned with the Washington state goals as well.

Slide 61:

We will publish a report annually and do an emissions inventory every five years to study our progress.

Slide 62:

With this I'm going to turn it over to Beth Carper.

Beth Carper, Puget Sound Clean Air Agency: Great. Thanks, Stephanie. In order to save time I'm going to gloss through the targets here, and really focus on the lessons learned. For oceangoing vessels, our primary targets are to surpass the ECA requirements and to encourage carriers to join third-party certification programs.

Slide 63:

Oceangoing vessels are our largest contributor to the airshed. With ECA, that will provide significant diesel particulate emission reductions in our area. Port of Seattle has also had an at-berth clean fuels program which provides incentives to shipping lines to use lower sulfur fuels before the ECA mandate. To date this has been the most cost-effective diesel emission reduction project with our port. Beyond ECA, of course, shorepower is an option. We already have shorepower in a lot of our terminals here, but we'll be looking at expanding that more, and as our LNG becomes more predominant we'll be looking into that as well.

Slide 64:

For harbor vessels we really want to look at sharing and recognizing best practices and technologies that reduce fuel and reduce emissions. And then again we want to encourage and promote third-party certification programs.

Slide 65:

With harbor vessels, our most common and successful projects have been with engine replacements. They are expensive and really a company is not going to replace their engine unless their current engine is about to fail, or has failed, or if there's some kind of economic incentive. So grants are kind of important for these types of projects. The smaller tug companies especially don't have a lot of experience with grants, so the idea of a competitive bid process or scrapping their old engines are a little bit foreign, and they require a little bit more hand-holding for those processes. And then just the nature of the business—there are a lot of delays that happen with these projects, so you need to keep that in mind as you're working with these companies.

Slide 66:

For locomotives, we like to encourage everyone to participate in a fuel efficiency program, and when possible we want to get rid of unregulated engines and replace them with Tier 2 or better engines.

Slide 67:

Like harbor vessels, engine replacements have been one of our most successful projects. I will note that we've had a stronger resistance to participating in grants from private rail. With the public, we've had a little bit more success. Another solution that our ports have been looking at is anti-idling technology. There are various types of anti-idling technology, and we have provided grants to some of them—up to 50 percent or 100 percent of initial costs. Ultimately,

though, if the rail companies don't invest in anti-idling technology they're losing money, because this has been a really big fuel-saving technology.

Slide 68:

For cargo handling equipment we want the equipment to meet the Tier 4 interim emissions standards or equivalent. Again, we're promoting fuel efficiency plans.

Slide 69:

I've worked a lot with the cargo handling equipment retrofits over the last few years, and our primary focus has been on diesel particulate filter retrofits and idle reduction retrofits. With diesel particulate filter retrofits, the real key is that you need to have a terminal that's invested in proactively maintaining their equipment, both their engine and the retrofit equipment. If you've got that, you have a really good chance for success. We find that pre- and post-installation is still very necessary, regardless of how proactive your terminal is. These projects require significant follow-up support. For idle reductions we have a program that is just wrapping up right now. It really was slow in starting, but as far as all of our retrofits go, this one has been the most successful with regards to satisfaction of the end user. We found that there are a lot of co-benefits to the pre-heaters that we installed: battery life is better, it's easier to start the engine, there's less maintenance, and the vehicles are better to drive.

Slide 70:

For trucks, we want them to meet the 2007 emissions standards with EPA and have a fuel efficiency plan.

Slide 71:

For trucks, we really found in our area the scrap and replacement program is the best option to meet our strategy. It's a little bit challenging, because owners and operators don't have significant capital to buy replacements, and it also requires significant administrative resources. However, we have had success in these and got funding from the ports, state environmental agencies, and CMAQ, and we're hoping DERA soon. So I'm going to say next slide and pass it on to Stephanie again.

Slide 72:

Stephanie Jones-Stebbins: These are our targets for port administration; again, these are just things like using equipment on our construction projects that we would also allow on our container terminals and things of that nature.

Slide 73:

Pilot projects: one of the things we've committed to in our updated Northwest Ports Clean Air Strategy is that each port will evaluate or engage in at least one pilot project or demonstration

project each year, and right now the Port of Seattle is partnering with Puget Sound Clean Air Agency to look at a CNG conversion pilot project for drayage trucks. We're kind of excited about that.

Slide 74:

Some of the lessons learned overall—getting all three ports to agree specifically on the emission reduction goals was challenging. We have different growth rates, different appetites for stretch goals, and just kind of a different outlook on a number of things. But once we did it, and managed to get to agreement on these goals, I think we've all felt really good about. I think that the successful collaboration from the first strategy and the work we've done over the last couple of years really laid the foundation for making more ambitious goals. Working with ports in another country is also challenging. It's kind of deceptive; Canada is so similar to us in so many ways that you forget that there's an entirely different governmental structure and different words for the same things, and things like that. But it's been great working with them, because they have programs that are different than ours in many ways, but they've really been leaders in sustainability as well.

A couple lessons learned from the politics—sometimes the largest-emitting sector isn't the one which the public, and therefore elected officials, pay attention to. For instance, trucks have a relatively small part of overall emissions here in the Puget Sound area, but they've really had, I'd say, at least half the focus, if not more, and we've had potential programs to reduce the emissions, but they're not our largest emitting sector. We've found that incentivizing voluntary actions takes money, which has been difficult in these economic times. But we know that having Puget Sound Clean Air and the other regulators as partners has helped us to position ourselves as well for receiving grants as well.

Slide 75:

That's our presentation. You can email either of us if you have more questions.

Jayme Ballard: Thank you both, Beth and Stephanie. We have a few questions for you. The first is: "Does Seattle have shorepower at its container terminals?"

Stephanie Jones-Stebbins: No, we have shorepower at our cruise berths.

Jayme Ballard: Another question for Beth: "What locomotive idle reduction technologies have proved most successful in reducing idling hours regardless of location, ambient temperatures, and things of that nature?"

Beth Carper: I don't really have a good answer for that. I think it really depends on the particular operations of the rails and, like you said, the geographic location; we don't have real cold weather here, but I think that different rails have different preferences on what they use. I don't know the exact numbers of which has been most successful.

Jayme Ballard: One other question before we move to the open floor is: “Given the challenges you overcame in setting common goals across multiple ports internationally, do you think there’s promise for an entity to set common goals for all U.S. ports, potentially with some of the best practices that Elena mentioned?”

Stephanie Jones-Stebbins: That’s a great question. I feel like I’m going to have to ponder that a while before I can answer it. You know, I don’t know, because the ports are so different, but there was just three of us. I don’t think that it’s impossible. I think that it is a big challenge, and as we all know, the more groups collaborating, the longer things take. That may mean that more people support you when you get there, but it seems like having something that everybody agrees to, all ports agree to, does seem like a challenging task, which is a little bit different than a recognition program such as the one that Elena described, I think.

Jayme Ballard: Thank you. Great. So if we could just advance to the Q&A slide...

Slides 76-77:

I just wanted to remind folks we have left ample time for questions and answers from our presenters. I know several of you have typed questions in; I encourage you to continue to type in your questions as we move into our discussion portion.

First, I would like to ask a question to Elena. The question is: “When you say recognized ports, is that limited to port authorities or would it be private sector actors as well?”

Elena Craft: I think those are all questions that are still outstanding. I think we all know that ports operate in different capacities. Some serve as operating ports, some serve as landlord ports. There are a lot of different ways in which a program to highlight best management practices could be implemented, so I think those are details that, hopefully, in the coming months will be part of the discussions of how a project like this could be rolled out.

Jayme Ballard: My next question is identified for Rose. The question is related to some of your emissions reductions work: “How well did the DPF fitted on the genset locomotive work? Can you give us any more details?”

Rose Siengsubcharti: As far as the installation went, there weren’t any problems at all with the installation part of the process. The diesel particulate filter itself—and this is a project that we had worked on with Johnson Massey, who is our technology provider, and it was also under a grant project that we did with ARB through their air quality improvement program—there wasn’t any problem with the installation, and it performed well. We had some issues that came up with regard to the locomotive, itself but it was unrelated to the actual project itself.

Jayme Ballard: Rose, while we have you I have one more question for you: “What is your annual budget for the TAP program?”

Rose Siengsubcharti: For the annual budget, each port has about \$1.5 million that we have allocated for the Technology Advancement Program. That's \$1.5 million per port, so a combination of \$3 million that we are able to use towards technology projects.

Jayme Ballard: Thank you Rose. I have a couple questions for Heather. The question is: "How has the Port of Virginia used emissions forecasting data? What is the value in forecasting, and what can it tell you that is different than what emissions inventories can tell you?"

Heather Wood: What our forecasting data allows us to do is set targets. We're an ISO 14001 facility for operations, so we have to set metrics and objectives, and what the inventory allows us to do with the forecast is try to set some reasonable objectives or even stretch goals. It just gives us an idea of where we could possibly get to.

Jayme Ballard: Also directed at Heather: "Has the Port of Virginia considered developing a clean air strategy similar to the Northwest Ports Clean Air Strategy?"

Heather Wood: I think we do have a strategy. We probably just aren't as formal about it as the Northwest strategy. We have it for our container operations—there may be an opportunity to do it on a larger scale with some of our industry partners in the region. I think our goal has really been to reduce our contribution to the air quality within the Hampton Roads region of Virginia, and we just seek to lower our contribution to that every three years. We submit a lot of our inventory data and whatnot to the state air modelers for inclusion in the State Implementation Plan.

Jayme Ballard: I have another question for Elena. The question is: "Do you know if any ports feed their emissions inventory data into health risk assessments to determine the port's impact on public health?"

Elena Craft: I don't think that we've reached that level where we're able to incorporate emission inventory information into a health impact assessment like that. I think there are a lot of additional pieces of a health impact assessment that includes more than just ports, so to my knowledge, that isn't the standard practice in terms of these emissions inventories, in terms of understanding the implication to human health in that way. The information is, I would say, more general, and is based on some of the modeling efforts that the EPA has put forward in terms of recognizing new technologies. There are lots of cost-effectiveness calculations that go into determining the value of, say, new engine standards for instance.

Jayme Ballard: Kind of a follow-up question to that: "In conducting your review of ports, can you give us percentage-wise how many have done emissions inventories?"

Elena Craft: Percentage-wise, I would just be guessing there. I would say probably half of the largest ports, maybe a little bit more than that. Maybe two-thirds of the largest ports have. Many of the smaller ports have not completed emissions inventories. And then there are ports, I think, that may have completed—you know, there's various levels of emissions inventories and how comprehensive they are, so I think there are probably a lot of ports that have done initial estimates or modeled estimates as opposed to doing a full-blown emission inventory.

Jayme Ballard: I have a question for all of the panelists. This question reads: “How best to encourage the development of zero emissions technologies?” Maybe Rose, do you have some insight on that one specifically?

Rose Siengsubcharti: At this time, the Technology Advancement Program has not completed a full demonstration for zero emission technologies, but we actively continue to see them, and as I mentioned in my presentation, we have two projects that we’re currently working with two technology providers, and we’re hoping that we can get these class 8 trucks into demonstration sometime this year. So it remains to be seen, and this is something that we’re interested in and we’re actively pursuing.

Jayme Ballard: Anybody else have an answer to that question?

Stephanie Jones-Stebbins: This is Stephanie Jones-Stebbins with the Port of Seattle. I want to point out that when we say zero emissions there are zero emissions at the particular site, but in terms of, for instance, climate change, if something is running on electricity there are emissions somewhere. We should bear that in mind when we use the term “zero emissions.”

Jayme Ballard: Thank you, Stephanie, for pointing that out. I have another question here for Heather. Heather, “What policies are in place in Virginia that might compare or complement the ask for regulations in California?”

Heather Wood: There are not any regulations in the true sense of the word. The Port of Virginia’s emissions programs, including our green operator truck program and our vegetable fuel-switching program, are all voluntary.

Jayme Ballard: Really quickly I wanted to remind everyone on the line that the materials will be available on our website, and that is epa.gov/otaq/ports. You’ll find there a recording of this webinar as well as the presentations. Moving on to another question, and this question I’m going to throw to Rose. Rose, “Have you had any success in working with terminal operators and truck drivers to implement operational practices that improve terminal efficiency and reduce emissions?”

Rose Siengsubcharti: At this time, we are mostly focused on technologies that reduce emissions, and not so much on the efficiency of the terminal or efficiencies with licensed motor carriers. It’s just basically the technologies that we’re working on. That is pretty much the main goal of the Technology Advancement Program, is to find these zero emission technologies. I know that in the past we’ve received some interest in working with companies that can help improve efficiencies, but it’s not within the scope of our Technology Advancement Program. We just focus mostly on the technology itself.

Jayme Ballard: I have another question, and this is for all of the panelists. “Have your air emissions inventories been utilized by your local MPO, or other local agencies, to make comparisons of port contributions to air quality improvements to those regions in which they operate?”

Stephanie Jones-Stebbins: I'll speak briefly to that. This is Stephanie with the Port of Seattle. The first time we did our emissions inventory, we actually worked collectively with the folks at state and regional government so that we could actually accurately depict what portion of overall emissions in the airshed were from maritime sources, not just Port of Seattle but all maritime sources. So we actually kind of did that collectively. The second emissions inventory we've done, the timing didn't line up, so we know how our emissions have changed, but we don't know how they've changed the proportion of the whole. We have certainly found that community groups and others have used the numbers in their own efforts as well.

Jayme Ballard: This question is for Heather, Stephanie, and Rose. "What compelled you to take action to reduce port emissions? What do you think may be holding some other ports back?"

Heather Wood: I think our catalyst was really witnessing the things that were going on in the Ports of LA and Long Beach and realizing the growth issues that they were having there, and understanding that we had the potential to grow almost to that size—to really start looking at what our emissions levels were and where we could make some improvements in order to manage that growth, and hopefully not get ourselves into a situation where we would have to ban certain trucks from the terminal or come under such intense regulatory scrutiny as the Ports of LA and Long Beach were. So that's what we looked at as our reasons for wanting to develop our inventory. We've had some emissions reduction programs in place since 2001, and we really wanted to put some numbers to those and see how effective they had been.

Stephanie Jones-Stebbins: I'm just going to add to what Heather said. This is Stephanie at the Port of Seattle. Some of the same issues came into play—we saw what had happened particularly in LA/Long Beach and saw that getting ahead and trying to reduce emissions in a voluntary and collaborative way would likely be an easier way to get there. That's one thing, but I think probably equally important was the fact that in early 2000 the then-director of Puget Sound Clean Air Agency, Dennis McLerran, came to the Port of Seattle and Tacoma with the numbers from a recent air toxics study showing that diesel particulate was more than three-quarters of the health risk to the Seattle area for air toxics. Although we have pretty good air quality here, we actually have pretty high numbers of diesel particulate matter, and it was a health risk. We know that ports run on diesel engines, so that really started a collaborative effort to work on emissions together. I think it was also understanding the health risks and having that collaborative relationship with the regulator, which was a really key part of our moving forward as the right thing to do.

Rose Siengsubcharti: This is Rose from the Port of Long Beach. I'm going to speak on behalf of both ports. Under our Clean Air Action Plan, it was always our mission to find strategies to reduce air pollution emissions from port-related cargo. We're the two largest ports in the United States, and we've come very far with regards to environmental programs, specifically in regards to air quality. We started down this path because we wanted to ensure the safety and health of our communities and the people that live in them, so that's what prompted us to develop the Clean Air Action Plan and develop all these strategic programs that we have under the Clean Air Action Plan like the Technology Advancement Program. Basically, we feel like it's in our duty

to address these emissions issues while we continue to grow. That's pretty much my short answer.

Jayme Ballard: Thank you all for answering that question, and I did want to remind everyone that we're getting short on time—we have about ten minutes left for the webinar. Questions are rolling in, and we won't be able to get to all of them. However, we will follow up via our email as well as our Ports website which I sent out to everyone. You should be able to see—it's epa.gov/otaq/ports.

I have a question for Elena. This question is around hot spots. "Can it be determined that hot spots are also in fenceline communities near ports?"

Elena Craft: I guess I would say that hot spots are anyplace where we see elevated levels of pollution; so yes, I think that has been demonstrated that in some communities there are elevated levels of pollution. You do need something like an air monitor to make determinations of the actual air quality in the area, so that would be an important point. But yes, they could include communities, depending on where those communities are located.

Jayme Ballard: I have another question for Heather. "Do you see a lot of long term idling or hoteling from heavy-duty diesel trucks at the ports? Is electrification being used or any other method to prevent emissions?"

Heather Wood: I hope we don't see any long-term idling or hoteling, because in that case we're not running our operation efficiently, and I think that's what we're looking to do. With every project we undertake to improve the efficiency of our services, enable to move the cargo faster, and turn those trucks around faster. I do see that progression towards more automated type aspects or automation within the facilities, and we've had great success with our clean truck program. I mentioned earlier, it's a voluntary program. We've retrofitted or replaced over 425 trucks in about six years, so, you know, the fleet is getting cleaner and with just regular turnover on top of our incentives, it should come to a good place. I think that's where we're looking, is to just move that cargo faster and more efficiently, and with that, reduce our emissions.

Jayme Ballard: I just have one more wrap-up question before we get to our concluding speaker. That question is a general question for all of our presenters: "Can anyone recommend first steps for smaller mixed-freight use ports?"

Stephanie Jones-Stebbins: I would say doing an emissions inventory is an important first step, because once you understand your emissions, it helps take steps forward on scientific data-driven grounds. One of the really challenging things is that if you don't really know specifically and have numbers to support where your emissions are coming from, it's much harder to make good decisions. I would say that would be a first step.

Rose Siengsubcharti: When we first started working on the development of the Clean Air Action Plan, we realized that this was something that the two ports would not be able to do alone. We had a lot of support from our agencies like the EPA and the Air Resources Board, as well as AQMD. Through this collaborative effort we were able to put together this big

monumental plan. My advice would be to try to get your local agencies involved to help build a stakeholder group. Also, I agree the emissions inventory is also good to get developed, because you can form your baseline and then you can measure your goals against the baseline.

Jayme Ballard: Thank you to all of our presenters once again. Thank you for responding to the questions, and thank you all for your thought-provoking questions.

Slide 78: Reade Kidd, The Home Depot

We'd like to hear some concluding remarks from one of our SmartWay Partners, Reade Kidd.

Reade is the director of international logistics overseeing imports of the United States' third-largest importer, as well as growing exporter trade. Mr. Kidd is responsible for origin, ocean, air, brokerage, and dray management and operations as well as global trade security. Reade?

Reade Kidd, The Home Depot: Hey, good afternoon. First of all, thank you for the opportunity to speak to you all, and thank you for taking the time and effort in what you all focus on a daily basis. On behalf of Home Depot I'd also like to say thank you for your continued efforts and focus on sustainability in and around the ports. That's obviously something that is important to us as one of our shareholder values is about "doing the right thing."

From the Home Depot perspective, what I would say is that we are partnering with ocean carriers, terminals, and dray providers in and around the port that look to drive the same things that you all talked about today. Although we don't contract directly with the terminals, we do work with our steamship lines and terminal operatives closely on a lot of the issues that you've all spoken on today.

A few things that the Home Depot is working on. As was mentioned, we're a proud and active member of the SmartWay program. We are very active in CRT, the Coalition for Responsible Transportation, and we've partnered with providers that are also looking to lean forward in the space that we're talking about today, whether it's companies like TTSI in the LA/Long Beach area, where they're investing in class 8 electric trucks that are enhanced by hydrogen for a zero emission footprint within the Ports of LA/Long Beach. With Maersk Line, as they continue to reduce their CO₂ footprint by 25 percent over the last few years by adding more efficient vessels, retrofitting existing vessels, and improving the overall energy efficiencies both in and around the ports. As well as folks like Evergreen—that's another one of our top-tier providers, and they're launching new S- and L-type what they're calling "green ships" that incorporate a lot of the environmental features well beyond current international and national requirements and really taking a step forward to the years to come.

So those are a few things that Home Depot is doing. Again, I think it's great that there are folks like you all on the call to partner with to drive change within the industry. Whether it's something that we do on the shelf, which is I think pioneering the high-flush toilets that actually decrease the amount of water per flush, or the LED light bulbs and things of that sort that we're actively pushing out in the consumer community, I think it's important that we also focus on the

areas that you all talked about today. Again, thanks for all you do, and we look forward to our continued partnerships together.

Slide 79:

Jayme Ballard: Thank you, Reade. This concludes our webinar. I did want to remind folks that we did have two previous webinars, the first of which was in September, and it focused specifically on industry. We also had a webinar in January that was heavily community-focused, and so I encourage you all to go back and listen to those webinars and listen to the discussion that took place there. We appreciate you participating in today's discussion. Please don't forget to fill out the brief survey, and remember—if we didn't get to your question on-air, we will follow up via email and post the questions on our website, which you can see there. Please feel free to contact us any time at talkaboutports@epa.gov. Thank you and have a wonderful day.