



## **West Coast Collaborative Marine Vessel & Ports Sector Meeting Summary**

Long Beach, California – October 24, 2007

*\*All presentations and related materials are posted on the West Coast Collaborative MV&P Sector website at: <http://www.westcoastcollaborative.org/wkgrp-marine.htm>*

### **Attendance**

See the participant list at the end of this summary. Approximately a quarter of all meeting participants were new.

### **Opening Remarks and Meeting Objectives**

The West Coast Collaborative (the Collaborative) was started approximately four years ago as a regional means to share information, identify opportunities to leverage resources in a way that supports progress and dampens down competitive issues, and when applicable, develop a shared approach to an issue. The Collaborative and the Marine Vessel and Ports (MV&P) Sector does not necessarily move as a full body, as different partnerships break out when it makes sense to move things forward. All Collaborative sectors are continually evolving based on current issues, funding, and events.

The goal of this meeting was to continue to foster partnerships and determine how the MV&P Sector can play an influential leadership role locally, regionally, nationally, and internationally. That is, to determine given all the current activities at the local, state, and international levels on the emerging regulatory and technological landscapes, what valuable contributions this regional group could make.

### **MV&P Sector Overview**

*See presentation given by Grace Cheng*

Key points from the presentation were:

- The MV&P Sector is one of six sectors making up the Collaborative.
- Sector activities include bi-monthly conference calls, yearly face-to-face meetings, a web-based technology clearinghouse, and support of conferences and events such as Faster Freight Cleaner Air.
- The Sector also plays a part in regional efforts such as the San Pedro Bay Clean Air Action Plan and national efforts such as the North American SECA Team.
- MV&P Sector grants are awarded through the Collaborative. Currently there are eleven funded projects totaling \$1.3M in EPA funding and an additional \$7.7M in leveraged funds.
- The Collaborative FY07 RFP will be issued soon, however it is limited to EPA Region 9 only, with a focus on demonstration projects. The FY08 budget year should result in more funding than the Collaborative has had in the past for grants, with a focus on deployment-oriented grant proposals and verified technologies.
- Send comments or suggestions for the Sector to Grace Cheng, Sector Lead at: [Cheng.Grace@epamail.epa.gov](mailto:Cheng.Grace@epamail.epa.gov).



### **Seawater Scrubber Demonstration Project**

*See presentations given by Dave Kircher and Don Gregory*

Key points from the presentation were:

- The purpose of the project was to demonstrate the technical feasibility and reliability of scrubber technology for providing an alternative option to use of lower sulfur fuel.
- An environmental impact assessment process was built into the project
- The project was funded by a group of stakeholders, including \$300,000 through a Collaborative grant. The full project will cost over \$1.7M when completed, with funding from Holland America, United States Environmental Protection Agency (U.S. EPA), Environment Canada, British Columbia Ministry of the Environment, Puget Sound Clean Air Agency, Port of Seattle, and Vancouver Port Authority.
- A multi-media, multi-national technical advisory committee was formed to oversee project implementation.
- A scrubber was installed in April 2007 on the MS Zandaam while the vessel was in dry-dock in Victoria, British Columbia.
- The scrubber operated for sixteen days in August 2007, both at sea and at port in Alaska where wash water samples were collected. A similar operational run was conducted in early September 2007.
- The scrubber is two meters in diameter, which is one of the current issues, as it is a bit large for the funnel. However, the design can be updated to provide a taller piece of equipment with a 30-40% smaller diameter.
- Water temperatures have proven to not be a critical factor in operation.

### **Ports of Los Angeles and Long Beach LNG Tractor Projects**

*See presentation given by Erik Neandross*

Key points from the presentation were:

- The project started in 2003 and the first liquefied natural gas (LNG) yard tractors were delivered in 2006 for use at Yusen Terminals at the Port of Los Angeles (POLA).
- POLA provided almost \$1M for twenty additional tractors and a fuel station.
- The LNG tractors have been running for over a year, providing good data. The final report is available via SES Terminal LLC (SES) upon request.
- Overall the demonstration was deemed successful as the tractors were reliable, drivers liked them, and the costs for fueling were comparable to diesel.
- Concurrently in 2006, three LNG tractors were deployed at the Port of Long Beach (POLB) Container Terminal, with funding from SES, POLB, and one of the first Collaborative grants. The report is currently under development and will be available in the near future.
- A similar project was initiated in early October 2007 at International Transportation Service, Inc. terminals at POLB. This is part of a larger initiative which can be read about at the following website:  
<http://www.polb.com/news/displaynews.asp?NewsID=62&targetid=1>



- In addition, SSA Terminals have repowered two yard tractors with natural gas engines and LNG fuel systems, as opposed to purchasing new builds. These repowers provide roughly twenty-eight hours of operating time from full to empty.
- SES has also started to look at intermodal rail yards, and has initiated a project with BNSF Railway, who purchased and deployed ten LNG yard tractors with funding from Southcoast Air Quality Management District (AQMD) through the Carl Moyer program.
- The next big step is to increase the LNG fueling infrastructure at both ports.

**Hybrid Yard Hostler Demonstration Project**

*See presentation given by Steve Sokolsky*

Key points from the presentation were:

- The main benefit of the hybrid system is emissions reduction due to reduced idling.
- Evaluation criteria include performance, fuel economy, emissions reduction, vehicle availability, operational impacts, and the business case.
- Both steady-state and transient emissions testing will be conducted with data available in early 2008. An on-road engine will be used for testing, if possible.
- It is estimated that this technology can reduce emissions by over 90% for both nitrogen oxides (NOx) and particulate matter (PM).

**Updates on Emerging Regulatory Landscapes**

**EPA Category 3 Marine Engine Rule**

EPA hopes to issue an Advanced Notice of Proposed Rulemaking for Category 3 marine engines in time for the International Maritime Organization (IMO) Intersessional Working Group meeting October 29-November 2 in Berlin, where there will be continued discussions on the revision of Annex VI and the NOx Technical Code. At a minimum, a draft copy will be available for the meeting. The rule will parallel the U.S. government proposal on amending Annex VI. In April 2007, EPA released a Direct Final Rule on the timing of when Category 3 engines would be regulated. To date, EPA has received three notices of intent to sue from the South Coast and Santa Barbara Air Quality Management Districts, and Earth Justice regarding the timing of implementation of the proposed rule, which was extended from the original proposed date.

**Boxer Bill**

The Boxer Bill (S1499), introduced by Senators Boxer and Feinstein, would establish fuel sulfur limits between 0.2% and 0.1%, effective December 2010. It would also require NOx, sulfur oxides (SOx), and carbon dioxide (CO2) emissions standards for both U.S. and international flag ocean going vessels, beginning in 2012, with the potential for additional levels set for 2016. The Boxer Bill would codify the U.S. government position on amending Annex VI, and require EPA to adopt the proposed changes to Annex VI under the Clean Air Act, regardless of if the changes are adopted by the IMO.



## California Ocean Going Vessels, Harbor Craft, and Cold Ironing Rulings

### *Ocean Going Vessels Auxiliary Engine Rule*

The auxiliary engine rule requires carriers to switch to either distillate marine gas oil (MGO) or marine diesel oil (MDO) twenty-four nautical miles off the coast of California. Implementation began on January 1, 2007. To date, there have been only four potential violations in over sixty inspections, and four instances of use of the non-compliance fee option. The California Air Resources Board (ARB) has not yet received applications under the Alternative Compliance Plan (ACP) or Alternative Control of Emissions (ACE) provisions. Most carriers are using marine gas oil with an expected average of below 0.5% sulfur. The actual average fuel sulfur content after sixty inspections is approximately 0.3%, with a great deal of variability in the sulfur levels from vessel to vessel. ARB received a court injunction on August 30, 2007 to suspend regulation due to a Pacific Maritime Shipping Association (PMSA) lawsuit on the rule. ARB appealed to the U.S. 9<sup>th</sup> Circuit Court, and was awarded a stay on October 23, 2007 while the court processes the case, so regulations are currently back in effect.

### *Ocean Going Vessels Main Engine Rule*

ARB is developing a new rule for main engines similar to the auxiliary engine rule. The proposed rule is scheduled to go to the Board for decision in April 2008. There have been multiple workshops with stakeholders to discuss the proposed concepts and draft language, as well as working group meetings with industry, engine manufacturers, fuel providers, and shipping companies undertaking early implementation to discuss technical matters related to fuel switching including feasibility and availability.

The goal of the rule is to realize significant emissions reductions in the 2009/2010 timeframe by switching to a distillate fuel. ARB is considering two approaches to implementation. One is a two phase approach with a 2009 Phase 1 fuel use requirement of distillate MGO or MDO in main engines up to twenty-four nautical miles off the coast of California, and a second phase scheduled for 2013 or 2014, requiring a 1% sulfur fuel switch, again at the twenty-four mile boundary. An assessment of proposed Phase 2 would occur in 2012, and a feasibility review would occur in 2013 or 2014 to determine if the twenty-four mile boundary should be extended. The second approach is an in-use requirement on January 1, 2010. The end objective is to align the auxiliary and main engine rules, if possible, with likely amendments to the auxiliary rule once the main engine rule is established.

### *Harbor Craft Rule*

The Harbor Craft Rule is scheduled to go to the Board for decision on October 26, 2007. The rule applies to all commercial craft, with a focus on ferries, excursion craft, tugs and tow boats. The goal is to reduce 50% of emissions from those crafts that operate closest to shore, beginning in 2009. The rule calls for the replacement of unregulated Tier 0 and 1 engines with Tier 2 and 3 engines as they become available, with all engines replaced by 2022. There is a two to three year accelerated schedule for the Southcoast Air Quality Management District (AQMD). Other provisions include a requirement that all



new vessels must meet the most current standards, and that new ferries must use the best available controls for propulsion engines.

### *Cold Ironing Rule*

A new rule on cold ironing is scheduled to go to the Board for decision in December 2007. The rule would require cold ironing at five key ports in California by 2014, with 50% of visits using cold ironing by 2020.

### IMO Regulations

The United States government submitted proposed amendments to the air pollution regulations in Annex VI of the MARPOL convention to the sub-committee on Bulk Liquids and Gases (BLG) on February 9, 2007. To date, there have been six proposals from various member countries for amending the current Annex VI regulations, which set a 4.5% global fuel sulfur level (two sulfur emissions control areas (SECAs) have been established in Europe where a 1.5% level in effect). The U.S. proposal would strengthen limits on NO<sub>x</sub>, SO<sub>x</sub>, and PM pollutants allowed from diesel emissions and would require the use of low-sulfur fuels (as low as 0.5%). In addition, the U.S. proposal establishes performance based standards for these pollutants, allowing for implementation of a choice of different compliance mechanisms.

Intertanko, the tanker ship trade organization, has proposed recommendations which include the use of distillate fuels with a global sulfur content cap of 1.0% in 2010 and 0.5% in 2015 (establishment of a global SECA). The Intertanko proposal would also require that all ships use distillate fuel rather than fuel oil, which is lower in sulfur content, though its production can be high in greenhouse gas emissions. The diesel fuel would come from cokers at an estimated cost of \$1B to convert worldwide.

A technical sub-committee of IMO was established in July 2007 to look into the feasibility of the different proposals, and is scheduled to report back to the Secretary General on December 10, 2007 regarding their findings. The report will include only the data, not recommendations or opinions. Further discussions on the proposals will occur at the April 2008 IMO meetings.

Legislation (H.R. 802, the Marine Pollution Prevention Act) giving the United States authority to implement MARPOL Annex VI (which has been ratified by the U.S. government) was passed in the House and referred to the Senate Committee on Commerce, Science and Transportation on March 28, 2007.

### Roundtable Discussion on Emerging Regulatory Landscapes

The meeting participants spent a couple of hours following the regulatory updates discussing their various positions and perspectives on the new and proposed regulations. Below is a synopsis of the actions and decisions that resulted from these discussions.

The group found general consensus on the following key ideas (*Note: where government legislation was discussed, EPA withheld from the conversations*):



- A flexible approach that is as uniform as possible globally is desired. Industry wants to know what the goal is and they will figure out most cost effective way to reach it, the fastest possible, with the greatest health benefits.
- A global approach will not preclude the need for federal, state, and local level actions in some cases, as well as the ability to be more restrictive at a regional level where needed based on differing risk factors.
- There is strong support for the U.S. proposal to amend Annex VI due to its global, stringent restrictions and flexible approach to implementation. Other IMO voters and people doing business in IMO voting nations need to be targeted for support of the U.S. proposal.
- A message needs to be sent to IMO that makes it clear if they do not act in a timely manner, there will be fractious, chaotic action at other levels.
- In order to empower EPA to the maximum extent possible and provide the most credibility in the April IMO negotiations, the United States needs to pass Annex VI implementing legislation.

**Action**

A small, working group was formed to draft two joint letters of support – one addressed to Senators/Congressional delegations in support of Annex VI implementing legislation, and the other to (audience to be determined) in support of the U.S. proposal to amend Annex VI. The group will be chaired by Dennis McLerran of the Puget Sound Clean Air Agency. In the interest of fairness, minority positions will be considered. Volunteers for this group were: Barbara Cole, Fred Felleman, T.L. Garrett, Peter Greenwald, Eric Hands, Louis Rubenstein, Janea Scott, and Larry Thomas.

*Note: Since this meeting summary was drafted, the two letters were finalized and signatures are currently being collected from Sector members and organizations. The audience for the Annex VI amendment letter is still being considered.*

**Roundtable Discussion on Emerging Technological Landscape**

The group discussed the information provided in the morning’s presentations, as well as additional insights into current and recently completed demonstration and technological implementation projects both in the region, and further afield. Two main topics were discussed at length and are highlighted below with their accompanying actions as identified by the group.

**Topic 1**

Some felt that rather than pushing technologies, the Collaborative should focus more on encouraging the development of standards for implementation of those technologies deemed successful. Uniform standards would help drive technology decisions in a more comprehensive and focused way. Discussions regarding various standards, such as requiring the availability of shore power or low-sulfur fueling infrastructure, are currently happening within the nine IMO sub-committees of the Marine and Environment Protection Committee (MEPC). Meeting participants agreed that the Sector should ensure adequate representation and input on these committees.



***Action***

Ross & Associates will work with Sector members who sit on IMO's nine sub-committees to post on the Collaborative website a list of these committees, their representation, information on how to get involved, and the status of discussion.

**Topic 2**

Future EPA grant money will be awarded to verified technologies, with approximately 10% carved off for emerging technologies. However, the MV&P Sector has little to no verified technologies associated with it. Peter Murchie, Collaborative Lead, is currently in discussions with EPA headquarters regarding this issue. Grants will be deployment oriented and cover a host of options for using verified technologies in new ways, one of which may be advancing verified technologies into the MV&P context.

***Action***

The verification question will be further discussed on future MV&P Sector calls. The calls will include representatives from the national verification program to discuss the direction the program is headed and to hear from Sector members about sector-related verification issues. The goal is to foster an open dialogue and identify ways to move forward that best benefits the overall goals of the verification program and the Sector to reduce emissions.

**Updates on Emerging Port Planning and Partnership Efforts**

**San Pedro Bay Clean Air Action Plan**

*See presentation given by Heather Tomley*

Key points from the presentation were:

- The main forum for communication on progress of the Plan is: [www.cleanairaction.org](http://www.cleanairaction.org)
- Both ports have completed and released a 2005 Emissions Inventory, the first update since the 2001 (POLA) and 2002 (POLB) baselines. The ports have committed to annual updates.
- The Clean Trucks Program has reached significant milestones which can be read about on the Plan website.
- POLA will finish updating their air quality monitoring stations in December 2007.
- POLB's monitoring stations are up and running and have received good feedback.
- The two ports are developing a health risk assessment for 2005, the base year, and 2023, the goal end year. They will use mass emissions as a surrogate for risk.

**Northwest Ports Clean Air Strategy**

*See presentation given by Barbara Cole*

Key points from the presentation were:

- A 2005 Emissions Inventory was released this year for the Puget Sound region and includes a comprehensive greenhouse gas inventory.



- The three major Puget Sound Ports of Seattle, Tacoma, and Vancouver are working with regional regulatory agencies to develop a strategy for voluntarily reducing emissions based on setting performance standards and outlining flexible ways to meet those standards. Standards will be set for 2010 and 2015 for all marine, port-related sectors. The strategy will also include verification and reporting provisions, as well as climate provisions.
- The first draft of the Strategy was released on May 16, 2007 and is currently being updated based on an extensive stakeholder outreach process conducted over the summer. *Note: Since this meeting summary was written, a second draft was publically released on November 8, 2007 for review and comment.*
- The final draft will be sent to the Port of Seattle and Tacoma Commissions in early 2008, and to the newly amalgamated Vancouver Frazier Port Authority Board in mid-2008, for adoption.

Other Port Efforts

*San Francisco*

The Port of San Francisco is electrifying the soon to be primary cruise berth, using a \$1.9M grant through the state Carl Moyer program.

*Portland*

The Port of Portland is working on voluntary measures for emissions reductions, implementing ways to process trucks in and out of the port more quickly, and has purchased new, “greener” cargo handling equipment. The Port is also talking with local air agencies about creating a regional forum for the area.

*Oakland*

The City of Oakland is developing an air plan focusing on the seaport as part of an active regulatory state program. The city has a 2005 baseline emissions inventory to work from, however, is waiting on a human health risk assessment ARB is developing for West Oakland. As a measure of the differences between California ports, the Port of Oakland moves two TEUs per year, while POLA moves 14-16 TEUs. The Port of Oakland is looking at list of initiatives above and beyond the current regulations, either to implement themselves, or to encourage their tenants to implement. The Port holds a stakeholder meeting every six to eight weeks to discuss air quality issues and options for addressing those issues, and has set an aggressive implementation schedule with a goal of finishing by February 2008.

Pacific Rim Port Strategies

*Pacific Ports Clean Air Collaborative*

POLA has partnered with the Port of Shanghai over the past few years, and under this partnership the two ports have conducted staff exchanges funded through EPA. To further the partnership, the ports will be commencing a baseline study in the near future on the emissions of a specific vessel and route. POLA is also helping Asian ports with



cold-ironing, including implementation at a cruise terminal at the Port of Hong Kong and a feasibility study at Port of Shanghai. In December 2007, POLA hosted an invitation-only conference for the newly convened Pacific Rim Clean Air Collaborative, in which over 200 representatives of various ports and related industry and organizations around the Pacific Rim attended. The goal of this Collaborative is to share information and develop joint demonstration projects and ways to advance clean air strategies with regard to marine vessels that would result in faster benefits than if the ports acted independently. The Port of Shanghai volunteered to host a second conference in the spring of 2008, and the Port of Vancouver volunteered to host the third. For more information, visit the Pacific Rim Clean Air Collaborative website at: <http://www.ppcac.org/>.

#### *Pacific Rim-Northwest Ports Initiative*

Building off of POLA's partnerships and the Pacific Ports Clean Air Collaborative, EPA is leading an effort to identify specific Asian port partners and project opportunities that could be implemented between Asian ports and ports in the Pacific Northwest. The goals of this effort are to expand beyond sharing and strategies to on-the-ground implementation, and to foster relationships across the Pacific Rim. This effort will begin with two related technological research papers on "green ships" and eco-speed routing.

#### **Remarks by EPA Region 9 Regional Administrator – Wayne Nastri**

Wayne Nastri spoke to meeting participants regarding the EPA Region 9 management decision to prioritize air quality issues related to ports and goods movement, especially in the context of climate change and energy efficiency. He noted that Region 10 management, along with Region 9 and 10 state air agencies, is also focusing on marine-related issues, thus creating a united, regional backdrop from which to advance. He also spoke about the first ever cross-media gathering of EPA officials with representatives from every EPA Office and Region (with the exception of Region 8) that was convened to discuss how to develop a consistent and coordinated approach to address marine and port issues. He also noted the related focus on port issues in Regions 1, 2, and 3 and the plans for an inaugural Faster Freight Cleaner Air East Coast meeting in 2008. Mr. Nastri announced the new database tool created for the Collaborative to help quantify emissions reduction by project and health benefits, and thus greatly assist with grants management.

Additionally, Mr. Nastri highlighted movement forward on the regulatory front, locally, regionally and internationally. He highlighted the importance of global IMO regulations and the need for U.S. implementing legislation. He encouraged critical thinking from Sector members regarding new technologies and the sharing of successes. He also spoke of the importance of continued participation and dialogue between Sector members and with EPA, and encouraged members to speak with EPA and other regulatory agencies about what they should focus on and be aware of in their branches and when dealing with elected officials. Lastly, Mr. Nastri acknowledged the tremendous funding need, and noted that if it can be clearly shown why air quality and related issues are important, with acute health effects as a big driver, funding will come through.



### **Moving Forward – Closing Session**

Based on the day's presentations and in-depth discussions, the group identified the following areas, along with those discussed elsewhere in this summary, where the Sector (and Collaborative) can add value over the next year:

- Information sharing is a key activity of the Collaborative, and the Clearinghouse function should continue. However, it will only be successful if Sector members provide the information. Demonstration projects are important and critical and members want to know about both successes and failures in order to make informed decisions and advance technologies. The Sector should also consider ways for rewarding for those willing to take the risk, creating a safe harbor so no one is penalized for being proactive, and encourage release of information that may be considered proprietary at an early stage in order to gain the most benefit.
- The Sector should focus on demonstration projects that do not replicate other projects, as there is diminishing value to prove every variant. The key is to encourage innovation.
- The Sector should look at internal fleets as areas where demonstration or emissions reduction implementation projects could occur. The goal would be to expand what has already been done at EPA (their limited fleet will be repowered to use ULSD) and at the Department of Defense around new technologies that are being employed, not necessarily for environmental reasons, but that may have significant environmental impacts.
- The Sector could foster a joint effort to determine which projects are the best to move forward based on the funding available.
- The Sector should help to advance and support continued monitoring versus episodic monitoring. Continued monitoring would do more to help understand variability, rather than just supply another disparate data point.
- It would be helpful to have compiled information on reduction numbers and the sources of that information. The Collaborative should continue to develop the calculators on the Collaborative webpage.

### **Adjourn**

The meeting adjourned shortly after 5:00 p.m. The next Sector call will occur on November 28 from 9:00 – 10:00a.m PT. Call-in information is as follows: 1-866-299-3188 (passcode: 2065538087#).

All new participants are encouraged to sign-up for the Sector distribution list at: <http://www.westcoastcollaborative.org/list-signup.asp>. Per the day's discussion, Sector members are also encouraged to fill out the Clearinghouse information form as new projects are implemented. The form can be found here: <http://www.westcoastcollaborative.org/tech-clearinghouse.asp>.



## West Coast Collaborative Marine Vessel & Ports Sector Participant List

Long Beach, CA – October 24, 2007

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## **WEST COAST COLLABORATIVE**

A public-private partnership to reduce diesel emissions

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