Environmental Metrics for Shipping and Ports

AAPA Environmental Seminar

September 2014

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Remember the days when this was your biggest environmental challenge?

Today's agenda:

1. Why Metrics?
2. The Vessel Perspective
3. EPA port initiative

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Why have metrics?

- Metrics make the discussion concrete and increase focus among stakeholders.
- Development of metrics should be driven by the terminal operators and port authorities.
- Metrics should start simple, e.g. a local or regional focus and a few clear parameters.
- Terminals and ports are concerned that carriers or agencies will make decisions based on partial or incomparable data, or without understanding the full complexity of environmental footprint.

Types of Metrics:	
• Quantitative • Qualitative	• Maturity level • Leading indicators • Outcome metrics

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Port and terminal performance plays a major role in vessel environmental impact (and *vise versa*).

- Why?
  - Product guarantee
  - Customer satisfaction
  - Asset optimisation
  - Reduction of **WASTE**
    - Waste in the supply chain has a direct negative impact on the environment

- Efficiency reduces wasted time and resources at dock

- Shore-side infrastructure is critical to efficient movement and environmental impact.

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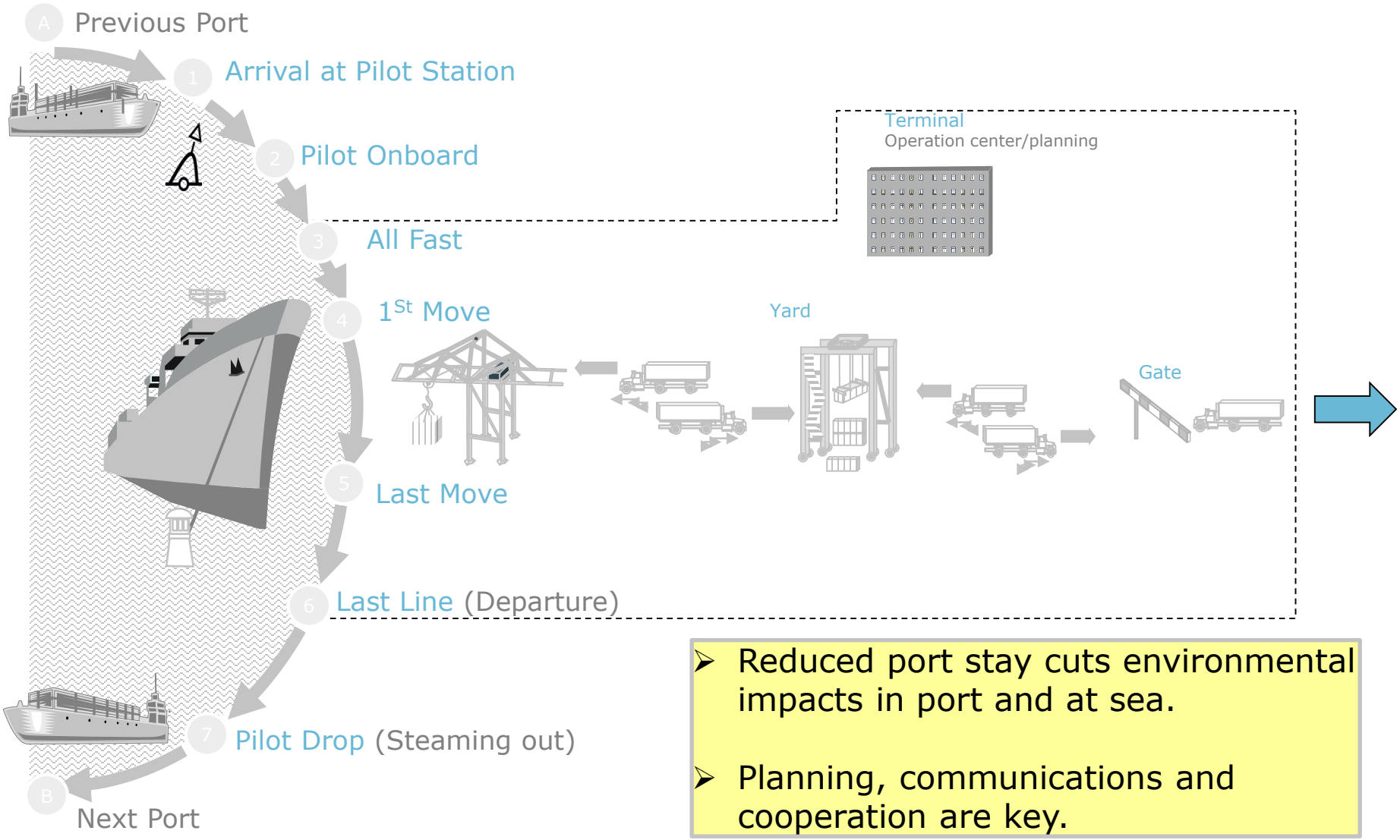
Vessel view of port operations



- Reduced port stay cuts environmental impacts in port and at sea.
- Planning, communications and cooperation are key.

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Our customers are demanding more sustainable supply chains.

"Supply chain collaboration plays a crucial role to become faster, more cost efficient and more sustainable in our end to end operation. We are looking to others outside our industry to help us improve this. Our partnership with Maersk Line is a great example".

- **Simon Smith**
Vice President, Logistics

"Maersk Line as a global leader in sustainability enables us to differentiate service providers by their carbon emission intensity and integrate that into our future cargo allocation plans".

- **Neil McKenna**,
Vice President, Transportation

"Our expectations for Maersk Line are that we together go as far as we can with the well know factors of environmental logistics. We also need to focus on innovation to secure that next generation logistics can start to reduce the major impact that transportations has on emissions globally".

-**Robert Ingvarsson**
Group Transport Manager

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Standard methods are available to report the environmental impacts of ocean shipping.

The best-accepted are from the Clean Cargo Working Group.

- **2014 CCWG membership includes >85% of the global container capacity**
- Annual Environmental Data Collection since 2005
- Standardized CO_2 analysis
  - Vessels emission factors are based on actual fuel, distance and containers carried.
  - Third party verified
  - CCWG publishes industry averages for 25 trade lanes.

http://www.bsr.org/en/our-work/working-groups/clean-cargo

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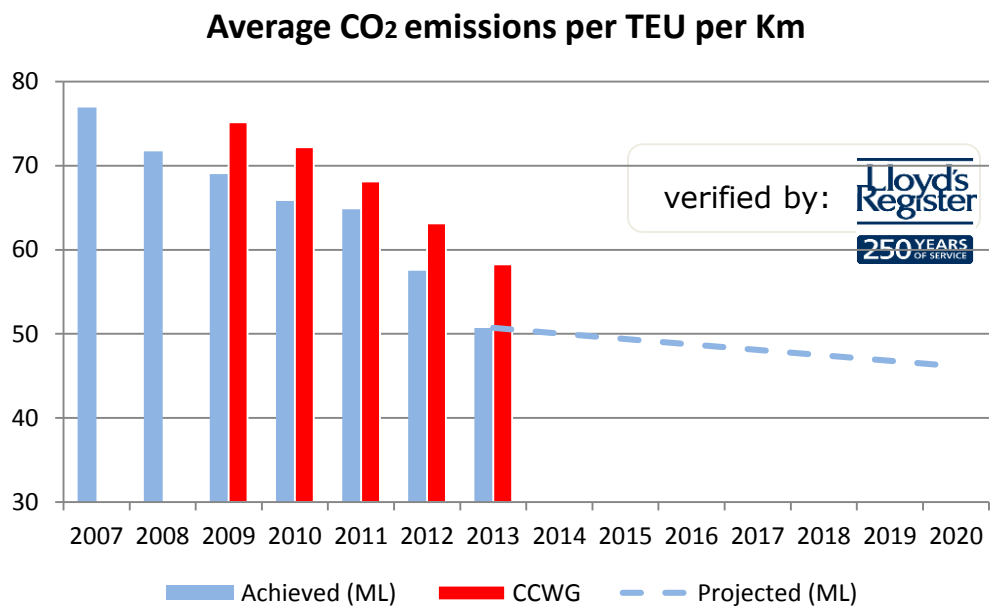
Vessels are increasingly fuel efficient.

This reduces fuel use, CO_2 and other air emissions.



Key Initiatives:

- **New vessels**
- **Eco-Retrofitting vessels**
- **"Steady steaming"**
- **Network planning & execution**

- **Air emissions dropped 12% in 2013 while volume grew 4%.**
- **CO2 reduction goal is <u>40% by 2020</u>.**

34%

less CO_2 per container per km 2007 - 2013

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New ships have higher efficiency and provide enormous economies of scale.

Mary Maersk leaving Algeciras Spain
21 July 2014 with 17,603 TEU

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Technical and operational innovation are essential for environmental progress.

- *Propeller, hull & trim optimization*
- *Waste heat recovery system*
- *Slow steaming and super-slow steaming*
- *Shore Power*

Other Initiatives

- *Alternative fuel tests*
- *New propulsion technologies*
- *ISO 14001 certified*
- *Maintenance of hull and propeller*
- *Voyage Efficiency System (VES)*
- *SOx scrubber studies*
- *Antifouling hull paint*
- *QUEST: Low energy chilled containers*
- *Modified bulbous bow*
- *Micro bubbles*
- *Ballast water optimization and treatment systems*

People are key: *Crew awareness and engagement*
Land side teams
Metrics, idea sharing

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Voluntary and regulatory programs have reduced toxic air emissions in port and in the Emissions Control Areas.

<u>Voluntary fuel programs in the US & Canada since 2006</u>:

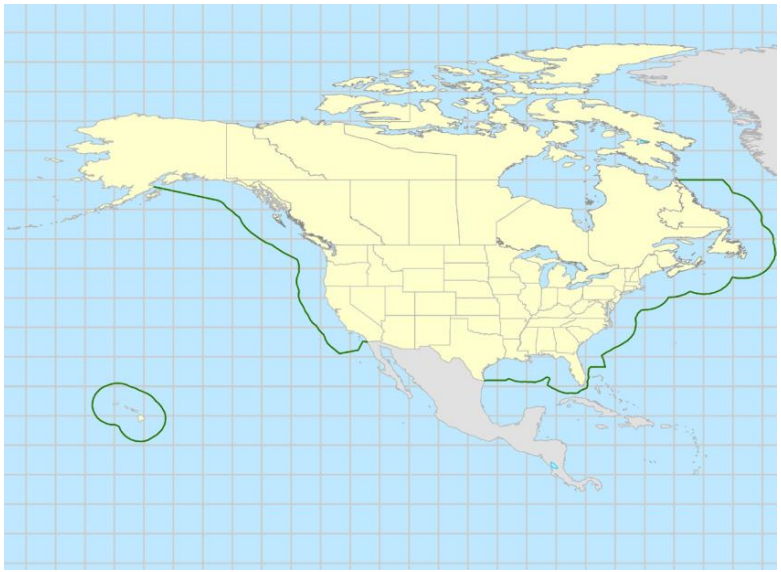
- Fuel is the 2015 ECA fuel <0.1%S
- Reduced emissions significantly:

SOx	90-95%
Particles (PM)	80-86%
NOx	6-10%

- North American Emissions Control Area in force since 2012.

- ***In 2015 the ECA requires 0.1%S***

- How do we measure and accelerate environmental progress in 2015 and beyond?



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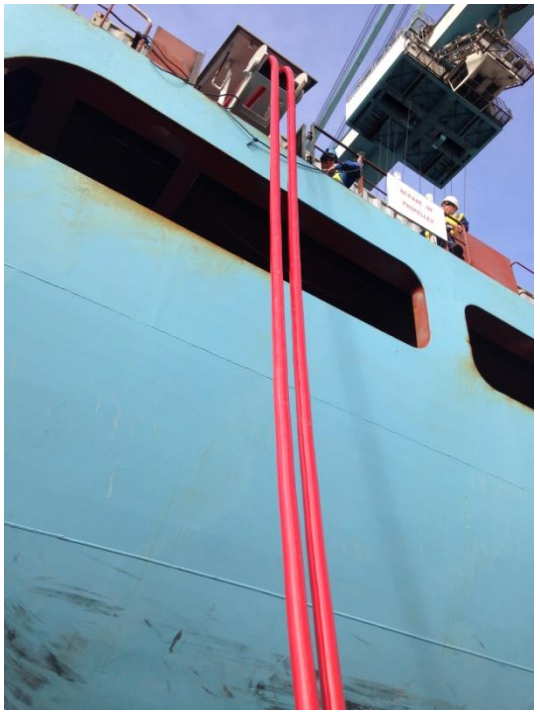
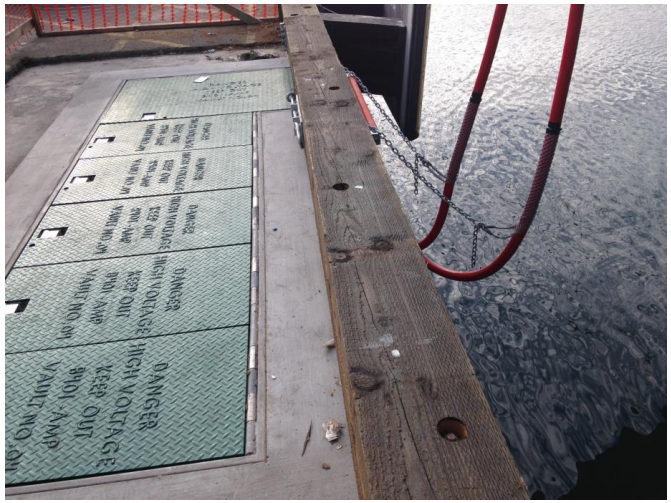
Is shore power the answer?

The jury is still out for container vessels…





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What challenges delay port environmental improvements today?

1. Communication is sporadic
2. Lacking a common framework, language and metrics
3. Many individual initiatives that create confusion
4. Need for stronger alignment between ports, terminals and lines on environmental programs and objectives.
5. Limited mechanism for input by other stakeholders.

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How can port stakeholders work together to accelerate progress?

- Industry wants to reduce our impact
  - Limited resources
  - Cannot pass costs to shippers
- Make it easy
- Help level the playing field:
  - Enforce the rules!
  - Incentives work
  - Coordinate voluntary and mandatory programs
- Consider each stakeholder's concerns and resources.

Specifics that help

- Build on international standards and upcoming rules
- Minimize administrative burdens
- Align metrics with priorities and goals
- Set goals in terms of environmental outcomes, with flexible approaches
- Promote innovation, efficiency and operational flexibility
- Avoid disincentives

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What role should EPA and TC play in the conversation?

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EPA's Port Initiative Vision

To develop and implement an environmentally sustainable port strategy that:

- identifies opportunities and finds solutions to help build a more sustainable ports system,
- creates healthy air quality for communities
- reduces climate risk
- supports our economy and jobs.

Timeline

- National Conversation on Ports
  - Sept. 24, 2013 - Promoting Port Stakeholder Success
  - Jan 14, 2014 - Collaborative Solutions & Community
  - Mar 4, 2014 - Advancing Sustainable Solutions
- Port Stakeholders Summit—April 8, 2014
- MSTRS Meeting—May 7, 2014

Common Themes

- Ports are a node in the larger goods movement supply chain. All nodes have different business/mgmt conditions
- Importance of level playing field
- Continual improvement program must drive real change, not just “recognition”
- Cross-agency coordination is critical
- Include some aspect of best practices/info sharing
- Program needs to be flexible to evolve over time
  - If start with air, should eventually include other environmental media
- Interact with communities – support economic viability and reduce cumulative impact

Charge for MSTRS Ports Initiative Workgroup

- EPA asked MSTRS for recommendations on:
  - Development of an EPA-led voluntary environmental port initiative
  - How to effectively measure air quality and GHG performance of ports and/or terminals within ports

- The workgroup should consider:
  - Past MSTRS and other recommendations
  - Existing port environmental improvement programs
  - Ports in the context of the broader transportation supply chain
  - Information from EPA's Harbor Assessments as available

EPA Ports Workgroup

MAERSK LINE/ Maersk Agency USA	Walmart
U.S. EPA	Caterpillar
Port of Long Beach	Manufacturers of Emission Controls Association
Port of New Orleans	Burlington Northern Santa Fe Corporation
Maryland Port Administration	Environmental Defense Fund
Virginia Port Authority	Evans Delivery
Port of Charleston	New Jersey Dept of Environmental Protection
American Association of Port Authorities	South Carolina Dept of Health & Environ Control
Ports America	Natural Resources Defense Council
Cargill	Greater Southeast Development Corporation
Target	International Council on Clean Transportation

EPA Ports Workgroup

- Subgroups
  - Definition of a Port
  - Port Inventory/Metrics
  - Strategies for Community-Port Engagement
  - Federal Agency Coordination
  - Barriers to Technology Implementation

Workgroup Timeline and Next Steps

- Timeline 18 to 24 months
- Subgroup meetings
- Development of work plan
- EPA coordination and federal agency coordination