



## Marine NO<sub>x</sub> Regulation, Taxes and Incentive Schemes

February 2015

### 1. Global IMO Tier III NO<sub>x</sub> Regulations

In April 2014 the IMO's Marine Environment Protection Committee, MEPC66, agreed amendments to MARPOL Annex VI, Regulation 13.

For the existing **North American NECA and United States Caribbean Sea NECA**, Tier III NO<sub>x</sub> emission standards will apply to marine diesel engines installed on new ships constructed on or after **1 January 2016**. All eligible vessels built from 2016, when sailing in the North American or Caribbean Sea NECAs, must be Tier III compliant.

For any **new NECAs** which come into force: Tier III NO<sub>x</sub> emission standards will apply to marine diesel engines installed on vessels constructed **on or after the date of adoption of a new NECA** by the Marine Environment Protection Committee, **or a later date** as may be specified in the application for the new NECA.

NO <sub>x</sub> Emission Control Area	Implementation Date of Tier III NO <sub>x</sub> Standards
<i>North American &amp; U.S. Caribbean Sea</i>	Applies to engines on ships constructed on or after 1 Jan 2016
<i>Future NECAs</i>	Applies to engines on ships constructed on or after the date specified in the amendment designating the future NECA

These amendments are expected to enter into force on 1 September 2015.

Beyond the North American and US Caribbean Sea NECA's – there are no additional NECA applications pending discussion at the IMO. However, debate around a potential **North Sea NECA** is at an advanced stage.

There are clear problems with the NECA approach advocated by the IMO. Firstly, it applies only to new vessels constructed on or after 1<sup>st</sup> January 2016. Ocean going vessels have an operational life of 25-30 years, yet Tier III does not target the existing fleet. Secondly, NO<sub>x</sub> is a localised pollutant and therefore the impacts of abatement will only be felt in NECA areas – yet so far only two have been designated through the IMO. Areas such as Hong Kong will receive no benefit from existing NECAs.

In part due to the above and in part due to revenue raising considerations, some countries and numerous ports have introduced instruments that provide an incentive to ship owners to take measures to reduce emissions of NO<sub>x</sub> from shipping. National schemes in Sweden and Norway and port specific initiatives implemented through Green Award and the Environmental Ship Index are listed below. Case studies of bespoke approaches applied in Long Beach and Singapore are also provided. New incentive schemes are being introduced on a frequent basis for NO<sub>x</sub>, SO<sub>x</sub> and GHGs. NO<sub>x</sub> is the sole focus of this review.

## 2. Sweden: Differentiated Port and Fairway Dues

<http://www.sjofartsverket.se/en/About-us/Finances/Fairway-Dues/>

- In 1996, the Swedish Maritime Administration (SMA), the Swedish Port and Stevedores Association and the Swedish Shipowners' Association agreed to use differentiated fairway and port dues to reduce emissions of NOx by 75% by 2010.
- The objective of the dues is to encourage vessels engaged in dedicated trade and other frequent vessel traffic involving Swedish ports, regardless of flag, to install SCR or other cost-effective NOx abatement techniques.
- Within the scheme, it is the gross tonnage (GT) of the ship that is differentiated for environmental performance.
- From 1 January 2005 the basic rate was SEK 1.80 (€0.18) per GT for passenger ships, SEK 2.05 (€0.20) for oil tankers and SEK 2.05 (€0.20) for other types of ships. Cruise ships were included in 2006 (SEK 0.80). On top of this rate, vessels were charged an additional SEK 0.70 (€0.07) per GT unless they use fuels containing less than a certain percentage of sulphur.
- The SMA has issued new regulations regarding fairway dues to be implemented from 1st January 2015. These are presented below (fee in SEK). The number of calls that are subject to fairway dues is limited to five per calendar month for passenger and cruise vessels and two per month for other vessels.

Type of vessel	Call of the month				
	1st	2nd	3rd	4th	5th
1. Passenger vessels and railway ferries	2,25	2,25	2,25	2,25	2,25
2. Cruise vessels	1,50	1,50	1,50	1,50	1,50
3. Vessels with cargo of mineral oil products in bulk	2,55	2,55	0	0	0
4. Other vessels	2,55	2,55	0	0	0

- Vessels that have installed equipment for the reduction of NOx and possess a NOx reduction certificate receive a reduction on the gross tonnage-based fairway dues. The reduction starts at an emission level of 6 g/kWh and falls to less than 0.5 g/kWh, in which case the vessel is totally exempted from gross tonnage-based fairway dues. For emissions below two grams per kWh there is a multiple factor for the ship's total installed engine power. The reason for this is to provide an economic incentive to ship owners to apply NOx reduction technology on auxiliary engines.
- By June 2009, 19 Swedish ports had introduced discounts for low emissions of nitrogen oxides. They apply a differentiation based on data for qualified ships from the SMA, but their systems are outside the influence of the SMA. Each port is an autonomous body, which in competition with other ports has to cover its costs.
- To overcome initial problems and encourage the installation of SCR technologies, the SMA offered ship owners partial subsidies for installations made during the first five years following 1 January 1998.

- By July 2009, 37 ships had a valid NOx certificate allowing a NOx-related discount on the fairway due (excluding vessels owned by the Swedish Maritime Administration). Among them 34 had installed SCR. At this juncture the National Maritime Administration estimated that the scheme reduced NOx emissions from ships calling at Swedish ports by around 44,000 tonnes per year.

### 3: Norway: NOx Tax and NOx Fund

<https://www.nho.no/Prosjekter-og-programmer/NOx-fondet/The-NOx-fund/>

#### NOx Tax

- From 1 January 2007 Norway introduced a tax on NOx emissions from ship engines above 750 kW. The rate was set at NOK 15 per kilo (equivalent to €1,765/ton).
- The tax applies to emissions from ships within Norwegian territorial waters irrespective of the nationality. However, for Norwegian registered vessels, the tax applies to emissions in “near waters”, which are defined as sea areas within 250 nautical miles of the Norwegian coast. Ships in international traffic are exempt, including vessels operating in direct traffic between Norway and foreign ports.
- The tax is calculated on the basis of actual NOx emissions. If these are not known, it is calculated on the basis of a source-specific emission factor. If neither actual emissions nor the source specific factor are known, factors determined by standard values will be used.

#### NOx Fund

- Since the introduction of the NOx tax, 15 Norwegian business organizations entered into an agreement with the Ministry of the Environment to reduce the effective tax for the offshore sector.
- For participant enterprises, payments to the Business Sector’s NOx Fund replaced the government’s NOx tax. Enterprises that sign an agreement to pay NOK 4 (€0.47) per kg to the NOx Fund will be exempt from paying NOx tax for a period of three years, but in return they have to commit themselves to investigate investments required to reduce NOx and to report back to the board of the fund.
- More than 90% of the emissions (approx. 100,000 tons) that were initially subject to the tax are now covered by agreements that exempt them from paying the duty.
- The board of the NOx fund pick the most cost-effective projects, which may receive 75% of the investment costs from the fund. The fund will also support operational costs such as urea for the SCR reactor. The incentive for urea is 1.5 NOK (€0.18) per kg of urea used.
- At the end of 2011, the program was believed to have contributed to measures that will reduce annual emissions by 30,000 tons. The average cost for measures to be undertaken on ships will, based on 250 applications, be NOK 8.86 per kilo (€1.04).
- The Business Organisations party to the NOx Agreement, 2011-2017, have committed themselves collectively to ensure the implementation of measures that will reduce their emissions of NOx by 16,000 tonnes by the end of 2017.

### 3. Green Award

<http://www.greenaward.org/greenaward/>

- In 1994, the Green Award Foundation was established to initiate market incentives to promote quality shipping. In collaboration with the Port of Rotterdam the Green Award programme was launched. It is designed as an incentive to large vessels to improve safety and environmental protection by certifying ships that are particularly clean and safe. Ships with a Green Award certificate reap various financial and non-financial benefits.
- The Green Award certification scheme is open to oil tankers, chemical tankers and dry bulk carriers from 20.000 DWT and upwards, LNG and container carriers and inland navigation vessels.

- The Green Award procedure is carried out by the Bureau Green Award, the executive body of the independent non-profit Green Award Foundation. The certification procedure consists of an office audit and an audit of each individual ship applying for certification. Amongst many others, the assessment focuses on crew, operational, environmental and managerial elements.
- Worldwide, more than 1,500 tankers and 1,500 bulk carriers are operational in the categories for which the Green Award is available. More than 35 ports in nine different countries offer reduced port dues for vessels that carry a Green Award Certificate. Most of them offer discounts of 5-6% on port dues. Around 200 ships have been certified. Most of these vessels are larger than 50,000 DWT and are not used in short-sea shipping.
- Criteria related to air emissions can contribute a maximum of 10% of the total number of ranking points available. Points are awarded for NOx emissions of no more than 17 g/kWh.

### Green Award Ports

Name	Country	Benefits
Port of Ghent	Belgium	Reductions on the ship's tonnage. The ship's tonnage (ST) is reduced by: - 15% if it concerns sea-going vessels for which a valid bulk Green Award certificate can be submitted; - 20% if it concerns sea-going vessels not used for ro/ro operations or recorded in Lloyd's Register of Shipping as "pallets carrier" for which a valid shortsea Green Award certificate can be submitted - 10% discount on the harbour dues to Green Award certified inland navigation vessels from 1-01-2013
Port Metro Vancouver	Canada	23.4% savings over the basic harbour dues rate for oil tankers and bulk carriers. Port Metro Vancouver recognizes Green Award certified vessels as eligible at the Bronze level under the EcoAction program.
Port of Montreal	Canada	All Green Award certified vessels are granted 10% fee reduction on port dues.
Port of Sept-Iles	Canada	The Port Sept-Iles, Quebec, Canada gives a 10% discount on harbor dues only to all GA certified vessels from 01-01-2012
Prince Rupert Port Authority	Canada	All Green Award certified vessels are granted 10% fee reduction on harbour dues
Hamburg Port Authority	Germany	A reduction of 3% in port fees for crude oil, product and chemical tankers and LNG carriers of any size that hold the Green Award certificate
Gibraltar Port Authority	Gibraltar	A 5% reduction in tonnage dues for all Green Award certified vessels entering BGTW (British Gibraltar Territorial Waters) and calling at the Gibraltar Port.
Kitakyushu Seaport and Airport Bureau	Japan	Green Award certified LNG carriers receive a 10% reduction on port dues
Freeport of Riga Authority	Latvia	10% discount on port dues for oil tankers

Klaipeda State Seaport Authority	Lithuania	20% discount on waste reception facilities
Port Taranaki Ltd.	New Zealand	5% premium on the port fees for any Green Award ship
CentrePort Wellington	New Zealand	3% of the port's Marine Services Charge (MSC) for bulk carriers and oil tankers
Port Nelson	New Zealand	Starting 1 December 2009, the port offers a 5% discount off tariff price for marine services for all tankers and bulk carriers certified by Green Award.
Sohar Industrial Port Company	Sultanate of Oman	5% rebate on port dues for tankers
Administração do Porto de Sines SA	Portugal	5% premium on Tariff of port use (TUP) for Crude oil/Product Tankers
Administração dos Portos do Douro e Leixões	Portugal	3% premium on Tariff of port use (TUP) for Crude oil/Product Tankers
Administração do Porto de Lisboa	Portugal	5% premium on Tariff of port use (TUP) for Crude oil/Product Tankers
Administração do Porto de Setúbal	Portugal	3% premium on Tariff of port use (TUP) for Crude oil/Product Tankers
National Ports Authority of South Africa Richards Bay, Durban, Ngqura, East London, Port Elisabeth, Mossel Bay, Cape Town, Saldanha	South Africa	10% port dues rebate for Crude oil/Product Tankers in all South African national ports if not enjoying a 5% rebate in terms of double-hulled/SBT scheme.
Groningen Seaports: Eemshaven en Delfzijl	the Netherlands	Inland barges certified by the Green Award foundation are entitled to a 5% discount on the harbor dues
Municipality of Bergen op Zoom	The Netherlands	5% discount on the harbour dues to Green Award certified inland barges from 1-01-2013
Municipality of Meppel	the Netherlands	6% discount on the harbour dues for Green Award certified inland barges calling inland harbours

Port of Amsterdam	The Netherlands	6% premium on the port fees for Crude oil/Product Tankers and for Cargo Bulk Carriers Discounts on port dues for inland barges by level: Bronze - 5% Silver - 10% Gold - 15% Inland barges with certificates issued before the 17th of June 2014 are eligible for a 10% discount
Port of Dordrecht	The Netherlands	- 6% premium on the port fees for Crude oil/Product Tankers - 15% discount on the harbour dues to Green Award certified inland barges
Port of Rotterdam	The Netherlands	- 6% premium on the port fees for Crude oil/Product Tankers - 6% discount on port dues for LNG carriers - Inland barges complying with the CCNR2 requirements and that avail over a Green Award certificate receive a 15% discount on the port dues
Port of Utrecht	The Netherlands	30% discount on the harbour dues to Green Award certified inland navigation vessels
Port of Wanssum	The Netherlands	A 10% discount on the port dues for inland barges
Port of Zevenellen	The Netherlands	10% discount on the port dues for inland barges
Moerdijk Port Authority	The Netherlands	- 6% premium on the port fees for Crude oil/Product Tankers - 15% discount on the harbour dues to Green Award certified inland barges
Zeeland Seaports Vlissingen, Terneuzen	The Netherlands	- 6% premium on the port fees for Crude oil/Product Tankers and bulk carriers - 10% discount on the harbour dues to Green Award certified inland barges from 1-01-2013

#### 4. The Environmental Ship Index

<http://www.environmentalshipindex.org/Public/Home>

- The Environmental Ship Index (ESI – part of the World Ports Climate Initiative) identifies seagoing ships that perform better in reducing air emissions than required by the current emission standards of the International Maritime Organization. The ESI evaluates the NOx and SOx that is released by a ship.
- The index is intended to be used by ports to reward ships when they participate. The program is completely voluntary. The administration of ESI is carried out by the ESI bureau of IAPH.
- As from now, shipowners and shipping companies can have their ships rated according to the ESI on a voluntary basis. At the moment, this is free of charge. To do so, they have to enter the relevant data for their ships at [www.environmentalshipindex.org](http://www.environmentalshipindex.org). On the basis of that data, the ships then receive a certificate which serves as the basis for the environment-based discount on the tonnage charges payable. The total number of ships with a valid ESI score is 3196.

Name	City	Country	Incentives
Port of Amsterdam	Amsterdam	Netherlands	<p><a href="http://www.portofamsterdam.nl">http://www.portofamsterdam.nl</a></p> <ul style="list-style-type: none"> <li>▪ The ship must have an ESI-score (which indicates the amount of air pollution and CO2) of 20 points and above: below 20 points no incentive will be applied.</li> <li>▪ If the ESI-score is above or equal to 31 points, an extra bonus will be applied.</li> <li>▪ The height of the incentive is depending on the gross tonnage (GT) of the vessel.</li> <li>▪ Max incentive (settled as transparent credit items in the port dues invoice) €1,400</li> </ul>
Port of Rotterdam	Rotterdam	Netherlands	<p><a href="http://www.portofrotterdam.com">http://www.portofrotterdam.com</a></p> <ul style="list-style-type: none"> <li>▪ Clean seagoing vessels which score 31 points or more on the Environmental Ship Index (ESI) will receive 10% discount on the GT part of their port dues in Rotterdam.</li> <li>▪ At the end of each quarter Port of Rotterdam Authority will determine which vessels are eligible for the ESI-discount. Two conditions will be applicable: (1) at the actual time of arrival (ATA) the vessel must have an ESI score of 31 points or more and (2) the ship called at the port of Rotterdam in the quarter concerned. The discount applies to each call in the quarter concerned, with a maximum of 20 calls per single ship per quarter. The discount will be doubled if the ship also has an individual ESI-NOx score of 31.0 or more</li> </ul>
Hamburg Port Authority	Hamburg	Germany	<p><a href="http://www.hamburg-port-authority.de">http://www.hamburg-port-authority.de</a></p> <ul style="list-style-type: none"> <li>▪ Ocean going vessels will be granted a discount on port dues of up to 10%, with the staggered discount scheme starting at an ESI score of 20 points</li> </ul>
Ports of Bremen/Bremerhaven	Bremerhaven	Germany	<p><a href="http://www.bremenports.de">http://www.bremenports.de</a></p> <ul style="list-style-type: none"> <li>▪ A total of 25 ships with the best ESI score <math>\geq 30</math> will receive the following discount: <ul style="list-style-type: none"> <li>a. ships with a score of between 30 and 40 ESI points will receive 5 % discount per port call; b. ships with 41 ESI points or more will receive 10 % discount per port call.</li> </ul> </li> <li>▪ The discount will be granted at the end of the year and the figures verified by bremenports.</li> </ul>
JadeWeserPort Realisierungs GmbH & Co. KG	Wilhelmshaven	Germany	<p><a href="http://www.jadeweserport.de">http://www.jadeweserport.de</a></p> <ul style="list-style-type: none"> <li>▪ A maximum of 10 ships' calls per owner/operator for each port, with an ESI value of <math>\geq 20.0</math> will be entitled to a discount every validity period (calendar year) towards the payable harbour dues in the following increments: ESI value 20.0 up to 30.0 = 2.5% discount ESI value 30.1 up to 50.0 = 5% discount ESI value <math>&gt; 50.1</math> = 10% discount</li> </ul>
Port of Antwerp	Antwerp	Belgium	<p><a href="http://www.portofantwerp.com">http://www.portofantwerp.com</a></p> <ul style="list-style-type: none"> <li>▪ Seagoing ships with a score of 31 or more will be granted a discount of 10% on the tonnage dues. The Port Authority will guarantee this discount for a period of at least three years, so offering continuity for shipping companies that invest in improving the ESI score of their ships.</li> </ul>

Port of Zeebrugge	Zeebrugge	Belgium	<a href="http://www.portofzeebrugge.be">http://www.portofzeebrugge.be</a> <ul style="list-style-type: none"> <li>Ships that have a score from 20 on the ESI-index, may benefit from a discount of 10% on the tonnages that they have to pay in Zeebrugge.</li> </ul>
Port of Le Havre	Le Havre	France	<a href="http://www.havre-port.fr">http://www.havre-port.fr</a> <ul style="list-style-type: none"> <li>The ten cleanest shipping companies who comply with the Environmental Ship Index (ESI) and agree to sign up to the GPMH incentive framework will be rewarded with a 10% reduction in port dues</li> </ul>
Brunsbüttel Ports GmbH	Brunsbüttel	Germany	<a href="http://www.brunsbuettelports.de">http://www.brunsbuettelports.de</a> <ul style="list-style-type: none"> <li>Within the validity period (calendar year) 10 Ship entries in total with the best ESI-scores <math>\geq 20</math> receive a discount on port fees in the amount of: a) Ships with 20 up to 30 ESI-scores: 5 % discount, but 750,00 € maximum b) Ships from 31 ESI-scores on: 10 % discount, but 1.000,00 € maximum After expiration of the validity period (calendar year) the discount will be credited from Brunsbüttel Ports GmbH.</li> </ul>
Port of Ashdod	Ashdod	Israel	<a href="http://www.ashdodport.co.il">http://www.ashdodport.co.il</a> <ul style="list-style-type: none"> <li>Financial incentive will be granted to seagoing ships under the following terms: 1) Incentive will be granted to Container and Ro-Ro vessels with a valid ESI certificate and a total ESI score of 31 points or higher. 2) The ESI score to obtain the incentive is the ESI score as published on the official WPCI website, valid at the time and date of vessel arrival to the Port of Ashdod. 3) Incentive is given once per operational call, in which the ship loaded and/or unloaded cargo at the Port of Ashdod.</li> </ul>
Port of Tokyo	Tokyo	Japan	<ul style="list-style-type: none"> <li>Port of Tokyo, Japan, will become the first Japanese port to join ESI as an Incentive Provider, as of April 1, 2015.</li> </ul>
Port of Los Angeles	San Pedro	United States	<a href="http://www.portoflosangeles.org">http://www.portoflosangeles.org</a> <ul style="list-style-type: none"> <li>The Port of Los Angeles' (Port) Voluntary Environmental Ship Index Program has been developed to reward vessel operators for reducing Diesel Particulate Matter (DPM) and NOx emissions from their ocean-going vessels (OGVs). This program rewards operators for going beyond compliance by bringing their newest and cleanest vessels to the Port and demonstrating technologies onboard their vessels. It also encourages use of cleaner technology and practices in advance of regulations.</li> <li>Based on current forecasts, the Port needs additional emission reductions to meet goals established in the Clean Air Action Plan. By 2023, this plan calls for 77 percent DPM reductions and 59 percent NOx reductions.</li> </ul> <p><b>Three Incentive Opportunities</b></p> <ol style="list-style-type: none"> <li>Environmental Ship Index Incentive</li> <li>OGV5 – International Maritime Organization (IMO) Tier II or Tier III Standards</li> <li>OGV6 – Technology Advancement Program Demonstration</li> </ol>

			<p><b><i>Environmental Ship Index Incentive</i></b></p> <p><b>NOx Points:</b></p> <ul style="list-style-type: none"> <li>▪ Rated power, and rated engine speed (rpm) as well as actual NOx emissions (g/kWH) for the vessel’s main and auxiliary engines. (This information is contained in the vessel’s EIAPP Certificate.). The greater the ESI score, the larger the incentive. Each OGV is eligible for an incentive grant on a per call basis to the Port of Los Angeles based on the following ESI scores:</li> </ul> <p><b>40 or greater:</b> \$1,250 per call  <b>35-39:</b> \$1,000 per call  <b>30-34:</b> \$750 per call  <b>25-29:</b> \$250 per call (This introductory incentive is available for the first six months of the program.)</p> <ul style="list-style-type: none"> <li>▪ The Port will pay incentives to vessel operators for ship calls only after the date they have registered for ESI.</li> </ul> <p><b><i>OGV5 – International Maritime Organization (IMO) Tier II or Tier III Standards</i></b></p> <ul style="list-style-type: none"> <li>▪ OGV5 incentive focuses on reducing NOx from vessels in transit by rewarding shipping lines with the cleanest ship engines.</li> </ul> <ol style="list-style-type: none"> <li>1. OGV with an IMO Tier II main engine is eligible for an incentive grant of \$750 per call.</li> <li>2. OGV with an IMO Tier III main engine is eligible for an incentive grant of \$3,250 per call.</li> </ol> <p><b><i>OGV6 – Technology Advancement Program Demo</i></b></p> <ul style="list-style-type: none"> <li>▪ OGV6 - Technology Advancement Program (TAP) demonstration incentive is designed for existing vessels calling at the Port of Los Angeles. This program provides an incentive for OGVs that are demonstrating an emission reduction technology that reduces DPM and NOx emissions. All testing and demonstrations will be conducted through the San Pedro Bay Ports Technology Advancement Program.</li> <li>▪ TAP demonstration: \$750 per call</li> </ul>
The Port Authority of New York & New Jersey	New York	United States	<p><a href="http://www.panynjcleanvessel.org">http://www.panynjcleanvessel.org</a></p> <ul style="list-style-type: none"> <li>▪ The Port Authority of New York &amp; New Jersey has implemented a Clean Vessel Incentive Program. Through the Program the PANYNJ has made available financial incentives to encourage operators of ocean-going vessels (OGVs) calling at PANYNJ marine terminals (the Port) to utilize environmentally friendly clean ship practices.</li> <li>▪ Under the Clean Vessel Incentive Program, the Port Authority would provide a financial incentive to ocean going vessels that achieve high scores on World Port Climate Initiative Environmental Ship Index (ESI). The incentive would be given to each vessel call for an enrolled vessel that has a CVI Score of 20 points or greater. Additional incentive will be provided (on a per call basis) to vessels that have all engines meeting either Tier II or Tier III standards.</li> <li>▪ Reimbursements will be on a first come first serve basis</li> </ul>

			with annual funding caps of 1.6 million per year.
Prince Rupert Port Authority	Prince Rupert	Canada	<a href="http://www.rupertport.com">http://www.rupertport.com</a>
Ghent Port Company, limited liability company under public law	Ghent	Belgium	<a href="http://www.portofghent.be">http://www.portofghent.be</a>
Port Metro Vancouver	Vancouver	Canada	<a href="http://www.portmetrovancover.com">http://www.portmetrovancover.com</a>
Ports of Paris	Paris	France	<a href="http://www.haropaports.com">http://www.haropaports.com</a>
Port of Rostock	Rostock	Germany	<a href="http://www.rostock-port.de">http://www.rostock-port.de</a>
Port of Sohar	Sohar	Oman	<a href="http://www.portofsohar.com">http://www.portofsohar.com</a>
Port of Rouen	Rouen	France	<a href="http://www.haropaports.com">http://www.haropaports.com</a>
Niedersachsen Ports	Oldenburg	Germany	<a href="http://www.niedersachsenports.de">http://www.niedersachsenports.de</a>
busan port authority	Busan	Korea (South)	<a href="http://www.busanpa.com">http://www.busanpa.com</a>
Göteborgs Hamn	Göteborg	Sweden	<a href="http://www.portofgothenburg.com">http://www.portofgothenburg.com</a>
Seehafen Kiel GmbH & Co. KG	Kiel	Germany	<a href="http://www.portofkiel.com">http://www.portofkiel.com</a>
Port of Oslo	Oslo	Norway	<a href="http://www.ohv.oslo.no">http://www.ohv.oslo.no</a>
Atlantic Port La Rochelle	La Rochelle Cedex	France	<a href="http://www.larochelle.port.fr">http://www.larochelle.port.fr</a>
Norwegian Coastal Administration (Kystverket)	Ålesund	Norway	<a href="http://www.kystverket.no">http://www.kystverket.no</a>

## 5. Examples of other Port initiatives to reduce NOx

### *Port of Long Beach – LA: Green Ship Incentive Program*

- The Green Ship Incentive Program is a voluntary clean-air initiative targeting the reduction of NOx. It rewards qualifying vessel operators for deploying today's greenest ships to the Port of Long Beach and accelerating the use of tomorrow's greenest ships. Vessels with main engines meeting 2011 Tier 2 standards established by the IMO will be eligible for an incentive of \$2,500 per ship call. For still cleaner vessels meeting 2016 Tier 3 standards, the incentive will increase to \$6,000 per ship call.

### *Singapore – Green Port Programme*

Ocean-going ships that use approved abatement/scrubber technology or burn clean fuels\*:

- During the entire port stay of 5 days or less within the Singapore Port Limits (from the point of entry into Singapore Port Limits till the point of exit) will be granted 25% reduction in port dues; or
- Only while at berth will be granted 15% reduction in port dues.
- \*Clean fuels are defined as fuels with sulphur content of less than 1.00% m/m.

The Green Port Programme is only valid for ocean-going ships. The port dues reduction is not applicable to harbour or pleasure craft.

To qualify for the 25% reduction in port dues, the following must be adhered to:

- Ships using approved abatement/scrubber technology should maintain its use throughout the port stay (from point of entry into Singapore Port Limits till point of exit).
- Ships burning clean fuels should initiate the switch to clean fuels for the main engine and auxiliary engine before entering Singapore Port Limits. The use of clean fuels should be maintained throughout the port stay to qualify for the concession.

To qualify for the 15% reduction in port dues, the following must be adhered to:

- Ships using approved abatement/scrubber technology should maintain its use while at berth to qualify for the port dues reduction.
- Ships burning clean fuels should initiate the switch to clean fuels for the main and/or auxiliary engine within 1 hour after completion of berthing. The use of clean fuel should be maintained throughout while the ship is at berth. The switch over from clean fuels should only be initiated 1 hour before unberthing.

The **International Association for Catalytic Control of Ship Emissions to Air (IACCSEA)** is the leading global authority on marine SCR technology. For further information - Please contact: [secretary@iaccsea.com](mailto:secretary@iaccsea.com)