

Benefits from the North American Emissions Control Area

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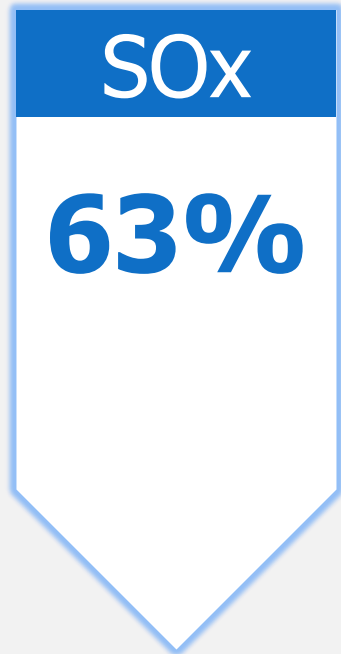
NEDC
Providence RI
October 2015



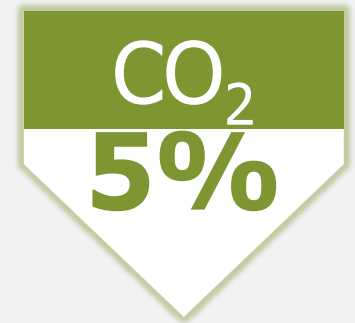
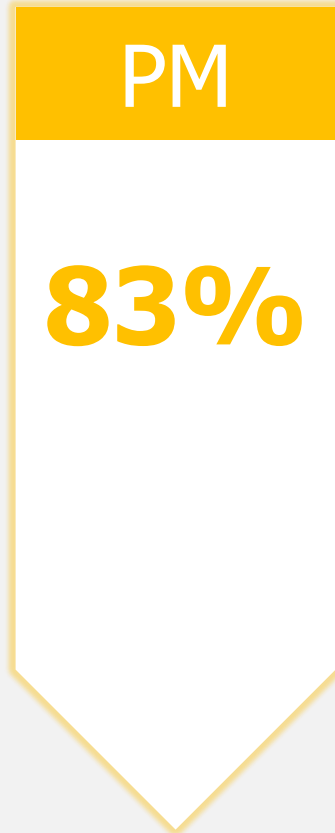
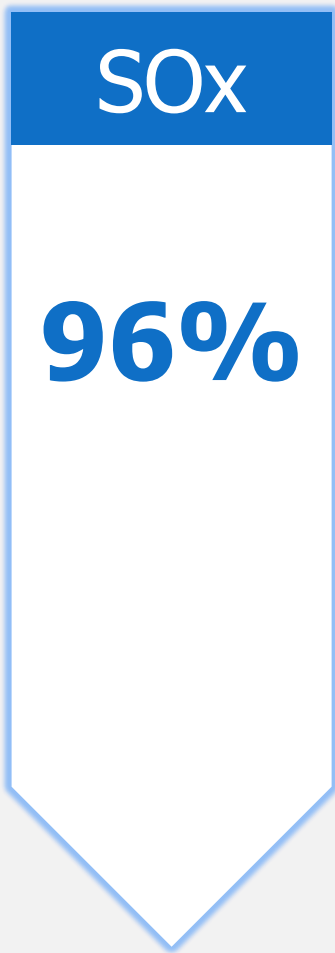
Regulations - Ocean-Going Vessels

- IMO – Low Sulfur Fuel Requirements
 - 2015 North American ECA – 0.1% S content
- IMO - NOx Emission Standard for Engines
 - Keel laid date 2011 to 2015 – Tier 2
 - Keel laid date starting 2016 – Tier 3
- IMO – Energy Efficiency Design Index
 - Promotes use of energy efficient in new vessels
- EPA Emission Standards for Category 3 Marine Diesel Engines
 - Aligns with IMO NOx standard and low sulfur fuel requirements

2012-2014 North American ECA Reduction from 2.7% S to 1.0% S HFO



2015+ North American ECA Reduction from 2.7% S to 0.1% S MGO



Thank You!



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ENVIRONMENTAL MANAGEMENT
AIR QUALITY • CLIMATE • SUSTAINABILITY

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