

# MES

EcoSilencer



# Marine Exhaust Systems

**Scrubbers a Win Win Solution**

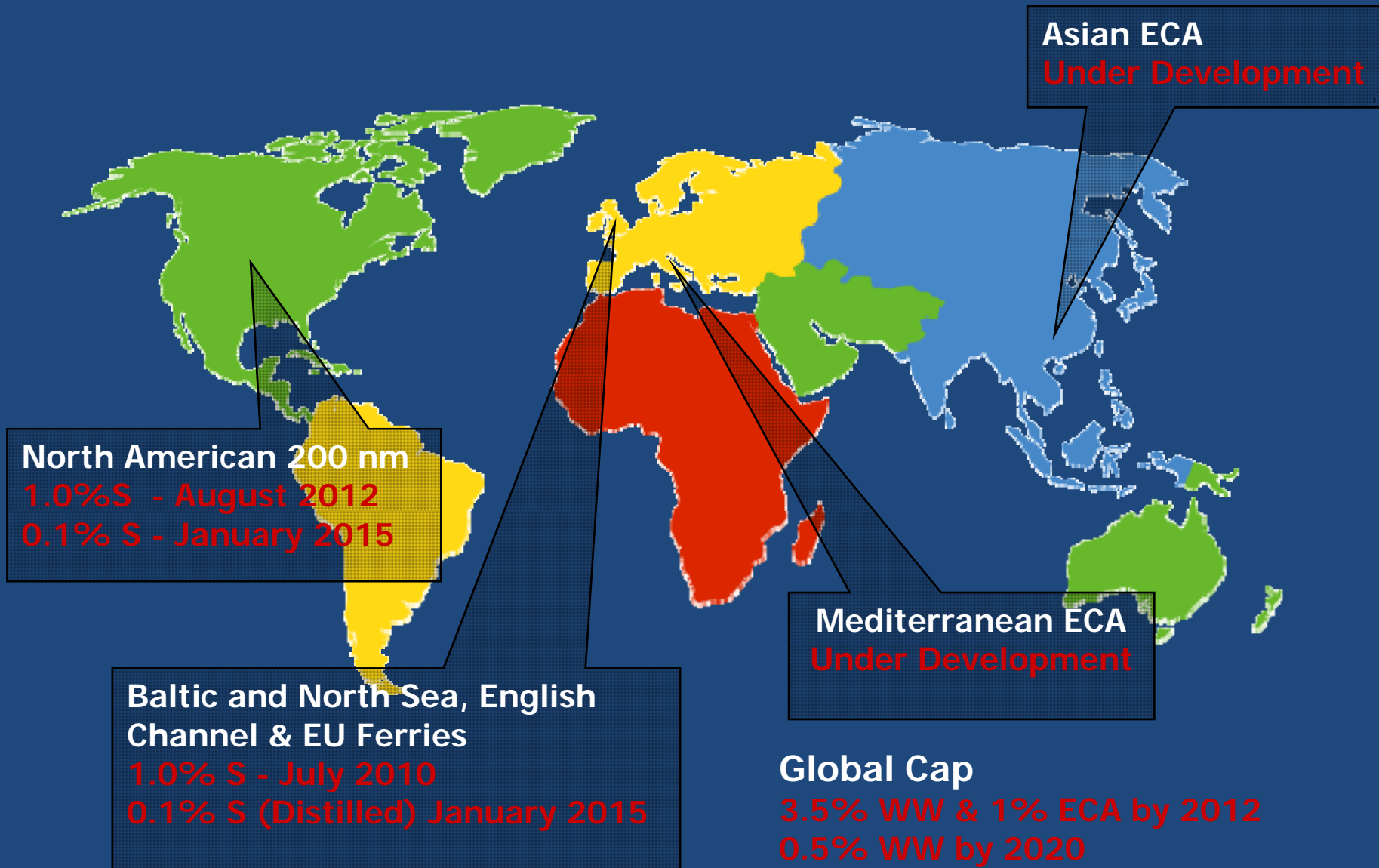
**4th IRON ORE & COAL SHIPPING SUMMIT**  
October 1st, 2012

**Karen Kokabi**  
Executive Vice President

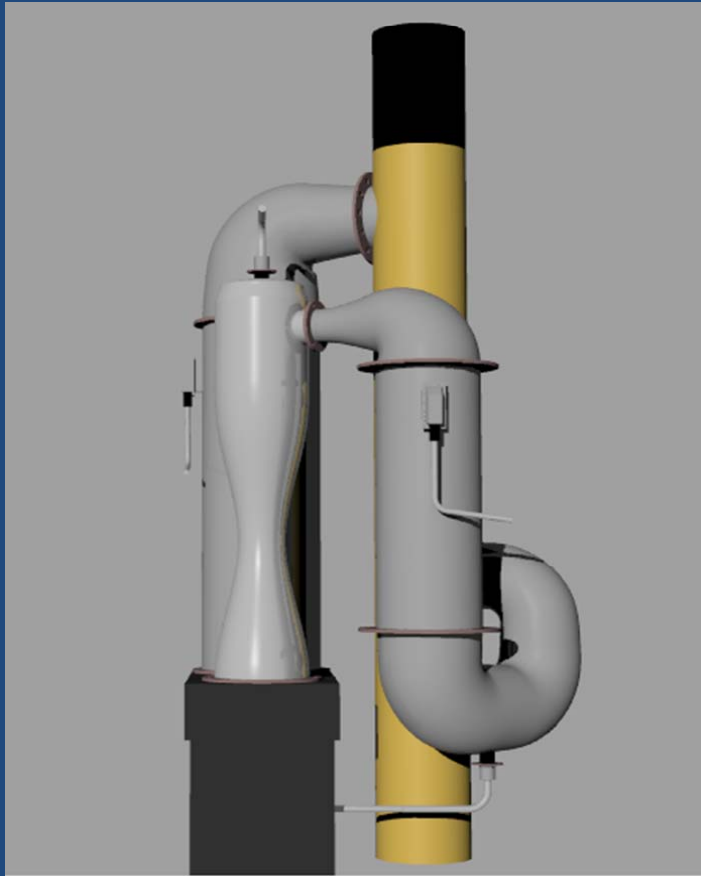
# Presentation Summary

- SOX legislation is sticking
- Scrubbers effectively address the legislation
- MES has cost-effective, efficient scrubber
- Scrubbers are the best solution and opportunity for ship owners

# Areas Affected by Legislation



# 2 Ways to Comply with Legislation



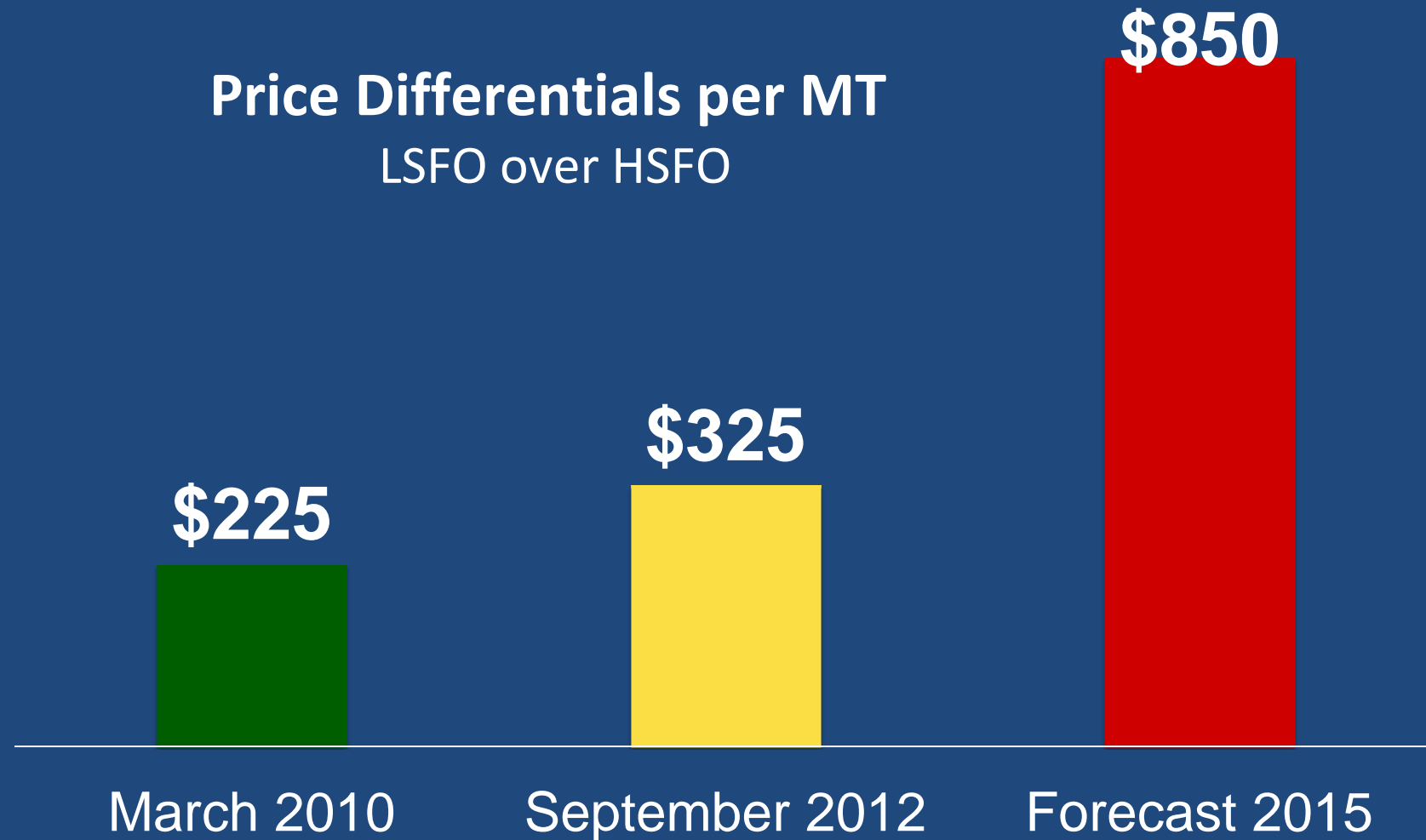
**Scrubbers**



**Low Sulphur Fuel Oil**

# Legislation is Driving Up Fuel Differentials

Price Differentials per MT  
LSFO over HSFO



# 10 MW Preliminary System Cost

H1 System Cost = \$2.0 MM

Installation estimate\* = \$1.0 MM

\* installation dependent on shipyard and new build versus retrofit

# Payback Table for 10MW System

| Fuel Cost Differential* | Usage at 1,000 MT | Usage @ 5,000 MT | Usage @ 10,000 MT |
|-------------------------|-------------------|------------------|-------------------|
| \$325/MT                | 9 years           | 1 year 10 months | ~1 year           |
| \$500/MT                | 6 years           | 1 year 2 months  | 7 months          |
| \$850/MT                | 3.5 years         | 9 months         | 4.5 months        |

\* Differential between HSFO and LSFO (0.1%)



# Scrubber Benefits for Ship Owner

- Very large savings in fuel
- Quick payback on investment
- Have a more competitive and flexible fleet
- Good fuel availability
- Show environmental leadership

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