

NAMEPA Marine Operations Conference

A New Decade: How Will it All Work?

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Agenda

- Where we are at...
- Where we are going...
- Pathways to get there...



Looking Toward a Changing World...

3 MAJOR CHANGES

Market Uncertainty and Predictability

Impact of Regulations on Carbon Journey

- Carbon Reduction
- Carbon Neutral
- Zero Emissions

Introduction of New Technology and the Rate of Change of Technology

4 INDUSTRY CHALLENGES



Low-Carbon Shipping

- Will require hybrid solutions and a systems-thinking mindset



Speed and Scope of Digitization

- Will require using data as a competitive differentiator to optimize performance



Cyber Security

- Will require greater risk-based decision-making informed by enhanced tools and analytics



Recognizing the Unintended Safety Consequences and Addressing and Managing Safety Risks

- Will require increased industry focus on the importance of ISM

3 GLOBAL SHAPERS

ESG Policy

ISM

Regulations & Technology

The Road to 2050 Has Already Started

- EU MRV and IMO DCS data collection
- Updates to MARPOL VI
 - IMO's 2020 Sulphur Cap is now in place
 - EEDI Phase II (Jan 2020)
 - EEDI Phase III (2022 and 2025)
 - EEDI Phase IV to include alternative fuels, hybrid propulsion, batteries, etc.
- IMO working towards defining their 2030 and 2050 targets at an implementation level
 - 40% CO₂ emission reduction per cargo transport by 2030, compared to 2008
 - 50% total reduction in Green House Gas emissions by 2050, compared to 2008



Decarbonization Solutions

Alternative Fuels and Energy Sources



- LNG
- LPG/Ethane
- Ammonia
- Hydrogen
- Methanol (Regional)
- Biofuels (Regional)
- Biofuels (Global)

Technology Improvements



- Air Lubrication
- Hybrid
- Wind/Solar
- Fuel Cells
- Improved Hull & ESD Options
- Electric Propulsion
- Carbon Capture (Shore/Ship)
- Cold Ironing

Operational Efficiency



- Weather Routing
- New Charter Arrangements
- Speed Optimization
- Just in Time Shipping
- Vessel Performance Reporting
- Smart Vessel/ Improved Reliability
- Fleet Interactive Performance/ Optimization

2050

Pathway to 2050

The Fuel of the Future



Digital Solutions

1

Abundant Data

2

Hyper Accelerated Innovations

3

Digital Navigation is Complex



Focus on Safety

SAFETY



THANK YOU

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