



# Ship Operator's Approach to Compliance with 2020 Sulphur Cap

MTCC Caribbean's 2<sup>nd</sup> Regional Workshop  
1-3 July 2019



# Carnival's Global ECA Approach

Carnival Corporation supports the implementation of the Global ECA in 2020, and there are four practical options for compliance:

Carnival has selected **Exhaust Gas Cleaning Systems (EGCS)** as the primary retrofit solution for the existing fleet

However, Carnival is an industry leader in other compliance options as well:

- **LNG** → *first in industry to deliver LNG capable ships*
- **Shore power** → *most cold-ironing-capable cruise ships in industry*
- **MGO** *in use in all ships without EGCS or LNG.*

\*A minority of our European brands may also plan to use 0.5% sulphur fuel blends

# Challenges in Compliance

- Availability of compliant fuel
- Fuel compatibility
- Reliability of fuel provided by suppliers
  - Compliance with current/incoming regulations
- Mitigation measures for bunkered fuel that is non-compliant or poses other compatibility issues

# Expectations from Maritime Administrations

- Enforcement of MARPOL Annex VI Regulation 18
  - Ensure that compliant fuel is available
  - Ensure that fuel oil meets quality and safety standards
- Continue to recognize the benefit of open loop Exhaust Gas Cleaning Systems (EGCS)
  - **Air emissions?**
    - **Open Loop EGCS provide major benefits to air quality** as originally intended by the IMO
  - **Washwater?**
    - Studies show that **open loop EGCS washwater has negligible impact on the ocean environment** based on years of monitoring and compilation/analysis of the largest EGCS washwater laboratory sample database in the marine industry.

# Thank you for your time

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