

FuelEU Maritime

OrbitMI's Approach to Compliance

An OrbitMI Position Paper with Bureau Veritas

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**BUREAU
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FuelEU Maritime: OrbitMI's Approach to Compliance

A Position Paper by OrbitMI, with Bureau Veritas M&O

Executive Summary

The maritime industry stands at a critical juncture with the introduction of FuelEU Maritime Regulation (EU) 2023/1805, a key component of the European Union's ambitious plan to reduce greenhouse gas (GHG) emissions. This regulation presents both challenges and opportunities for charterers, shipowners, operators, and managers. As the industry adapts to these new requirements, OrbitMI is positioned to provide innovative solutions that streamline compliance, optimize operations, and drive sustainable practices.

Key points:

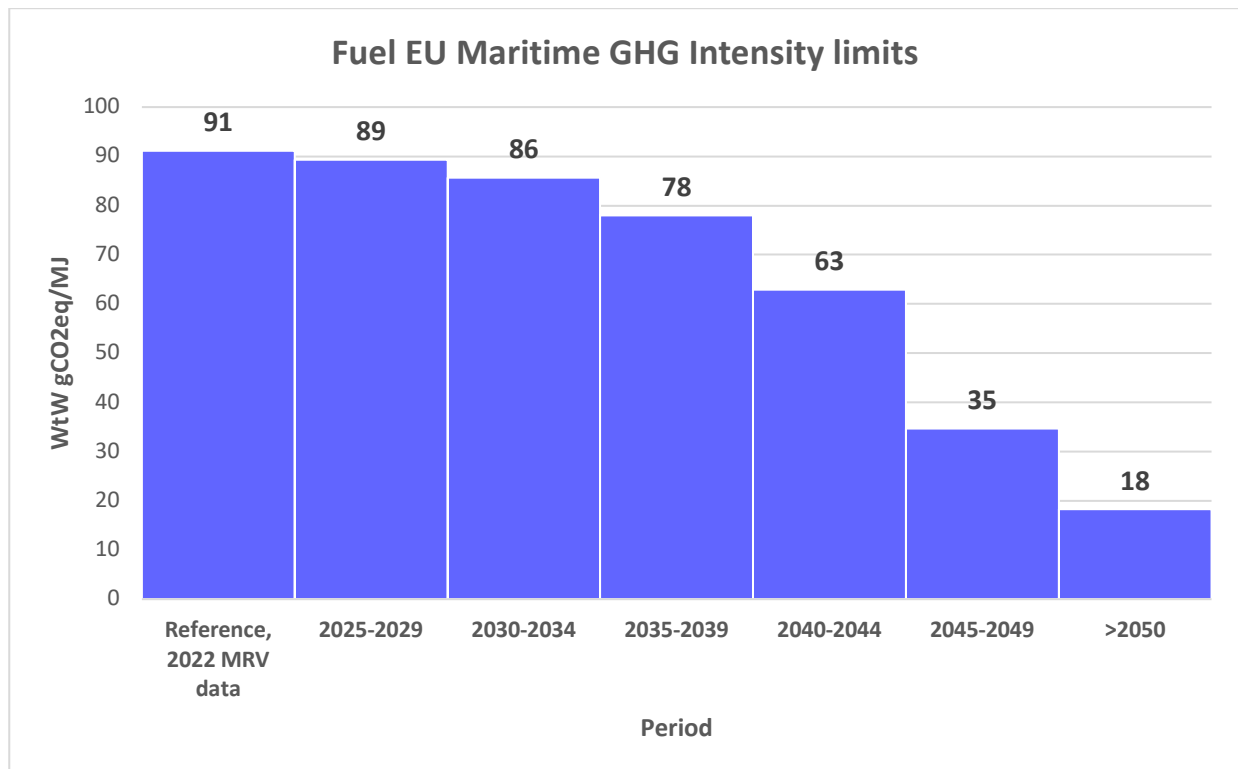
- FuelEU Maritime aims to incentivize the use of sustainable fuels and promote alternative fuel adoption
- The regulation introduces a penalty system based on compliance balance deficit calculated from GHG intensity of the energy used onboard vessels trading in EU, focusing on well-to-wake emissions
- Compliance can be achieved through flexibility mechanisms including pooling, banking, and borrowing of compliance units
- OrbitMI offers comprehensive tools for planning, monitoring, and optimizing to FuelEU
- Our platform facilitates collaboration, data management, and regulatory compliance

This position paper outlines the core aspects of FuelEU Maritime, its implications for the industry, and how OrbitMI's suite of solutions can help maritime stakeholders navigate this new regulatory landscape effectively. Reference materials on the regulation have been provided by Bureau Veritas Marine and Offshore.

The Basics of FuelEU

Key Targets and Timeline

- **Scope:** From 2025, applies to vessels of 5000 GT and above, regardless of flag.
- **Voyage Coverage:**
 - 100% of energy used for voyages between EU ports and at berth in EU Ports
 - 50% of energy used for voyages between EU and non-EU ports
- **GHG Intensity Reduction Targets:**
 - 2% by 2025, increasing progressively to 80% by 2050
 - The target becomes more stringent every 5 years
- **Onshore Power Supply (OPS):**
 - Mandatory for container and passenger vessels over 5,000GT, securely moored at berth, in all EU AFIR ports from 2030
 - Extended to all EU ports with OPS equipped quays from 2035
 - Possible exemptions if in accordance with art.6 of EU/2023/1805



Emissions and Compliance

- **Emissions Scope:** Adopts a well-to-wake approach, covering CO2 equivalent emissions
- **Responsible Party:** The ISM Company (Document of Compliance holder) is responsible for compliance
- **Compliance Mechanisms:**
 - Annual monitoring and reporting of GHG intensity
 - Flexibility through banking, borrowing, and pooling mechanisms
- **Penalties:** Non-compliant vessels face financial penalties and potential expulsion orders

Implementation and Reporting

- **Monitoring Plans:** Vessels must submit standardized emissions monitoring plans by August 31, 2024
- **Annual Reporting:** FuelEU report is submitted to verifiers by January 31st; verifier uploads to FuelEU database by March 31 each year
- **Compliance Documents:** Verifiers issue a FuelEU Document of Compliance by June 30th each year

FuelEU Maritime represents a significant shift in maritime regulations, driving the industry towards more sustainable fuel solutions. Understanding and adapting to these requirements will be crucial for shipping companies trading in the EU.

Comparing EU ETS vs FuelEU Maritime

Though the well-known EU ETS and the FuelEU Maritime regulations may look like a double penalty or duplicated taxes, they are complementary.

Criteria	EU ETS	FuelEU Maritime
Applicable Voyages	Same	Same
Applicable Vessel Types/Size	Excludes OSV	
Definition	Cap and trade system	A penalty system for fuel mix
Objective	Reduce CO ₂ and CO ₂ eq emissions in the EU annually	Promote the use of sustainable fuels
Emissions Addressed	Tank-to-Wake (fuel consumption onboard)	Well-to-Wake (full fuel lifecycle, including also extraction, production, transportation and distribution)
Market-Based Measure	Yes, EUA price varies with market demand vs. EU cap	Not strictly a market-based measure
Trading Mechanisms	EUA in primary (buy) or secondary (sell) markets	Pooling or borrowing for surplus/under compliance
Pooling Mechanism	Not accepted	Accepted
Banking Mechanism	Not accepted	Accepted
Borrowing Mechanism	Not accepted	Accepted
-	- Inefficient vessels (high consumption for profile) -	- Excessive fossil or non-sustainable fuel bunkering - -
Compliance Strategy	Estimate/monitor fuel consumption; anticipate EUA needs	Monitor -onboard energy mix; anticipate RED compliant fuel needs

A Deeper Understanding of FuelEU Maritime

FuelEU Maritime Regulation (EU) 2023/1805 is a key component of the European Union's Fit for 55 package aimed at reducing EU emissions by 55% (using 1990 as a reference) by 2030, with the broader objective of reaching climate neutrality by 2050. The regulation promotes the use of renewable and low-carbon fuels (RLF) in maritime transportation, with a target of reducing the GHG intensity of the energy used onboard by 80% in 2050. Ideally, renewable and low-carbon fuels (RLF) should represent 86-88% of the international maritime transportation fuel mix by 2050 to contribute to the EU's targets.

FuelEU also provides additional obligations to use onshore power supply (OPS) or zero-emission technologies while at EU Ports. It aims at promoting the use of On-shore Power Supply (OPS) by the concept of 'electrical power demand at berth' where it is important to underline that electrical power to be supplied by shore-side electricity facilities in ports must be sufficient to meet the demand derived from onboard electrical consumers.

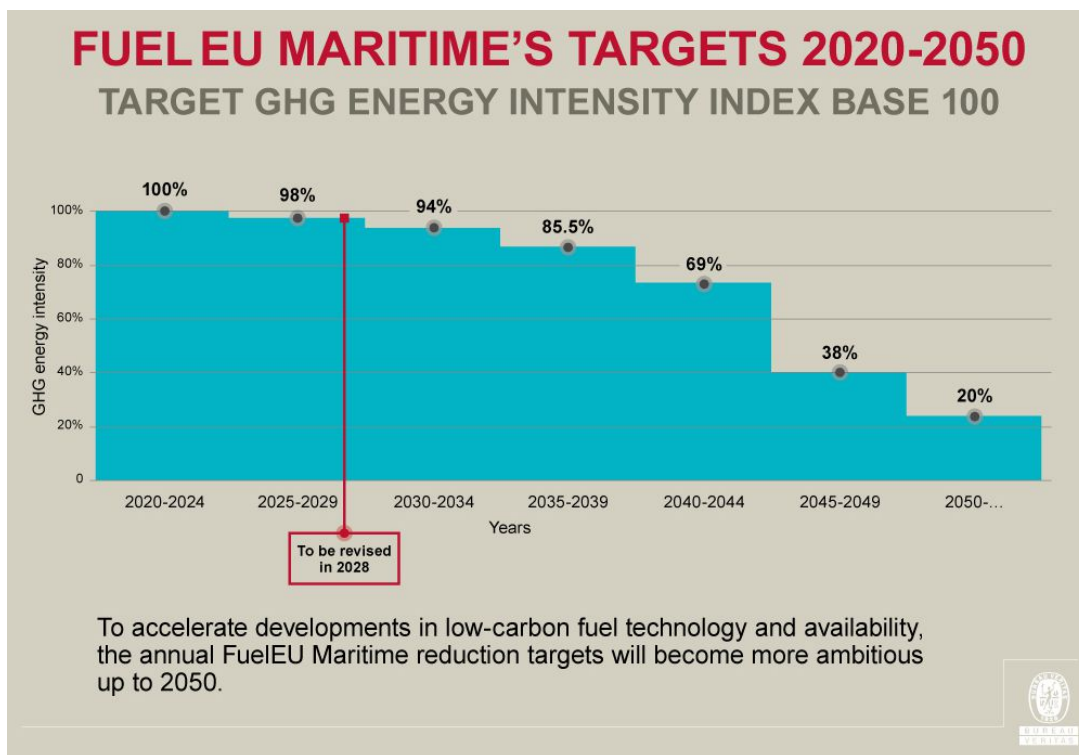


Image courtesy of Bureau Veritas Marine & Offshore: [Fuel EU Maritime's Targets 2020-2050 | Marine & Offshore \(bureauveritas.com\)](https://www.bureauveritas.com/en/industry/marine-offshore/fuel-eu-maritime-targets-2020-2050)

1. EU Fit for 55 Package

Proposed in July 2021, this aims to reduce EU GHG by at least 55% by 2030 compared to 1990 levels. New laws are in the regulatory process and pending approval. Although regional in nature, the regulations in the EU Fit for 55 package will pave the way for a global market-based scheme currently being prepared by the IMO as mid-term measures to be adopted in 2025 for an entry into force in 2027.

The EU legislation package include:

- **FuelEU Maritime** establishing penalties for excessive GHG intensity of vessels to promote overtime the use onboard vessels of renewable and low carbon fuels
- Extension of the EU Emissions Trading System (**EU ETS**) to include emissions maritime transport
- The Alternative Fuels Infrastructure Regulation (**AFIR**) requiring EU ports to develop electrical shore-power supply and bunkering infrastructures
- Revision of the Energy Taxation Directive (**ETD**) which impacts shipping for the bunker fuels sold within EU and the bunker fuels used on voyages within EU but not for international shipping beyond EU.
- Revision of the Renewable Energy Directive (**RED**) which provides the legal framework for the development of clean energy across all sectors of the EU economy and supporting cooperation between EU countries towards this goal.

This position paper focuses on the impact of FuelEU Maritime. For more information on the “EU Fit for 55” visit <https://marine-offshore.bureauveritas.com/sustainability/fit-for-55>

2. Monitoring, Reporting, and Verifying (MRV) and FuelEU database

Revised MRV rules include new methodologies for monitoring and reporting GHG emissions and verification processes, with various acts adopted to facilitate this transition. Related to FuelEU Maritime, monitoring and verification will begin in 2025 for each vessel.

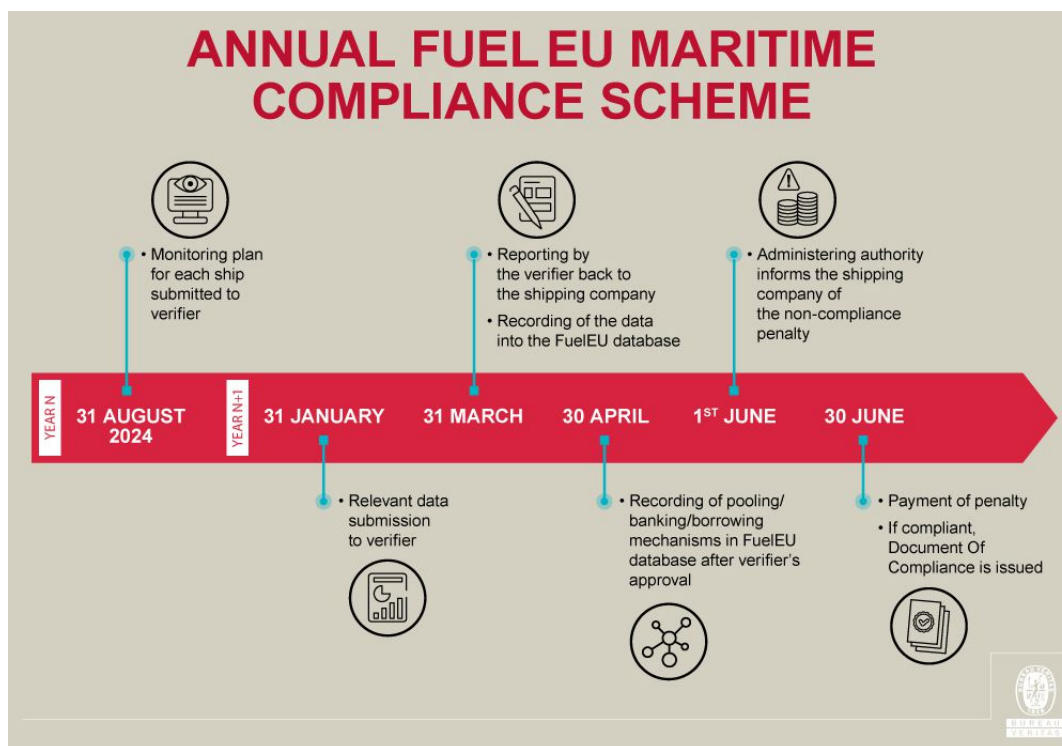


Image courtesy of Bureau Veritas Marine & Offshore: [Annual Fuel EU Maritime Compliance Scheme | Marine & Offshore \(bureauveritas.com\)](https://www.bureauveritas.com/en/industry/marine-offshore/annual-fuel-eu-maritime-compliance-scheme)

To support the enforcement of the regulation but also to publish the verified emission data, the European Maritime Safety Agency (EMSA) developed the database THETIS with a new feature “FuelEU module”.

3. Well-to-Wake (WtW) Emission Intensities and Methane Slip

FuelEU Maritime is based on GHG intensity of the energy used onboard on a full life cycle methodology which includes the Well-to-Tank (WtT) and the Tank-to-Wake (TtW).

The GHG emissions considered include both CO₂ and the CH₄ and NO₂ with equivalent CO₂ Global Warming Potential set to 25 to 298 respectively (i.e., One MT of methane equals 25 tons of CO₂). Note, the regulation has a significant impact on LNG engine technologies adopted as it considers a default value from 0.2% for LNG Diesel engines (dual fuel slow speed) up to 3.1% methane slip for LNG Otto engines (dual fuel medium speed).

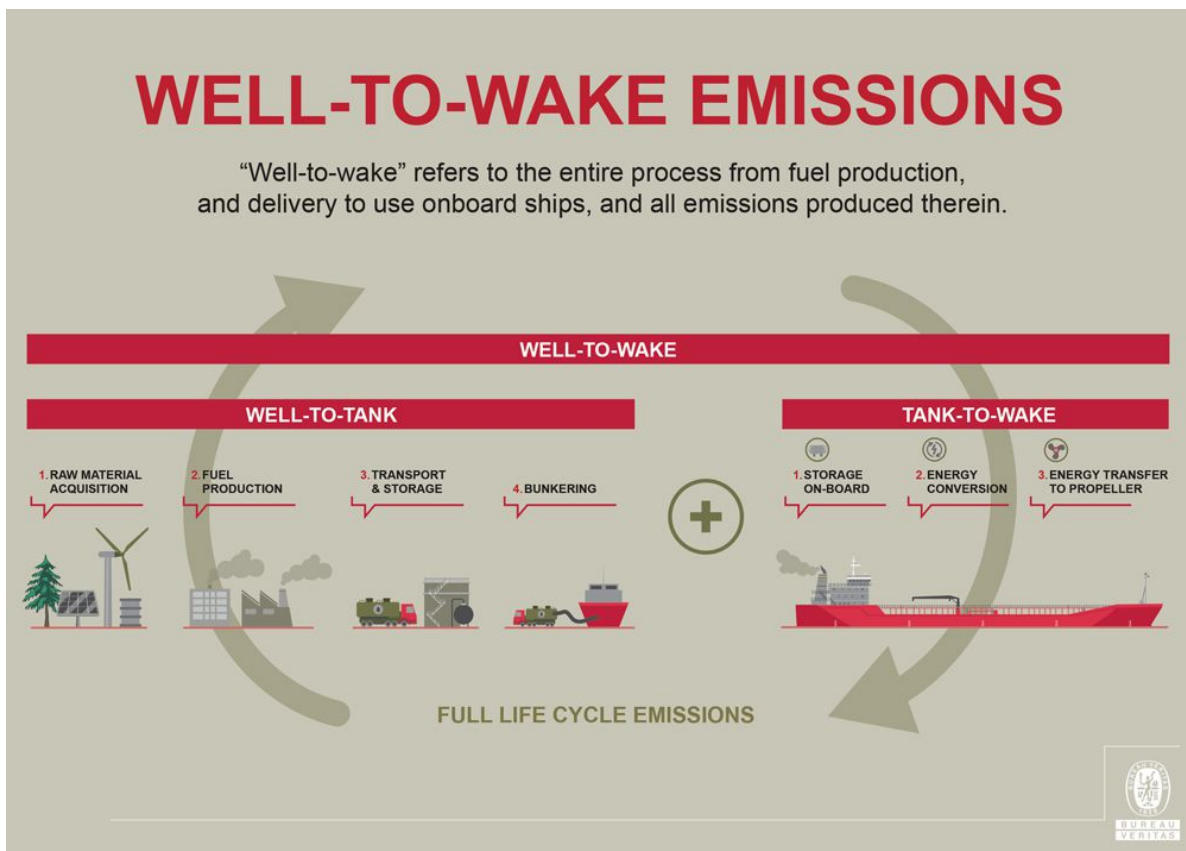


Image courtesy of Bureau Veritas Marine & Offshore: [How shipowners can decarbonize with a well-to-wake approach? \(bureauveritas.com\)](https://www.bureauveritas.com/en/industry/marine-offshore/how-shipowners-can-decarbonize-with-a-well-to-wake-approach?).

4. Fossil fuels, Biofuels, RFNBO and Low-Carbon Synthetic Fuels

Definitions and regulations for fossil fuels, biofuels, Renewable Fuels of Non-Biological Origin (RFNBO) are established. Specific emission factors for calculating their GHG intensities are detailed for both WtT and TtW emissions. Except for fossil fuels, actual emission factors can be considered based on fuel certification.

As an incentive, the energy from RFNBO are granted with a multiplier of 2 from 2025 to 2033 and mechanisms are set to establish sub-targets from 2034 based on RFNBO minimum percentages in the global maritime fuel mix.

As an example, the energy of a bunker sample that includes equal parts RFNBO and HFO by volume—a 1:1 ratio—will be calculated as though it included two parts RFNBO and one-part HFO—a 2:1 ratio.

5. Cost Implications

The regulation provide a trend for a target GHG intensity that progressively reduces overtime until 2050. If, for any reason, the vessel attained a GHG intensity in excess of its target, a penalty will be calculated based on this compliance deficit and the total energy consumed over the year, The amount payable will be calculated on the FuelEU database and will need to be paid for compliance to be achieved. Vessels may be issued an expulsion order if they are non-compliant for two consecutive years.

There are alternative mechanisms to address these penalties, including banking, borrowing and pooling (see the *Appendix: Alternative mechanisms to compliance*).

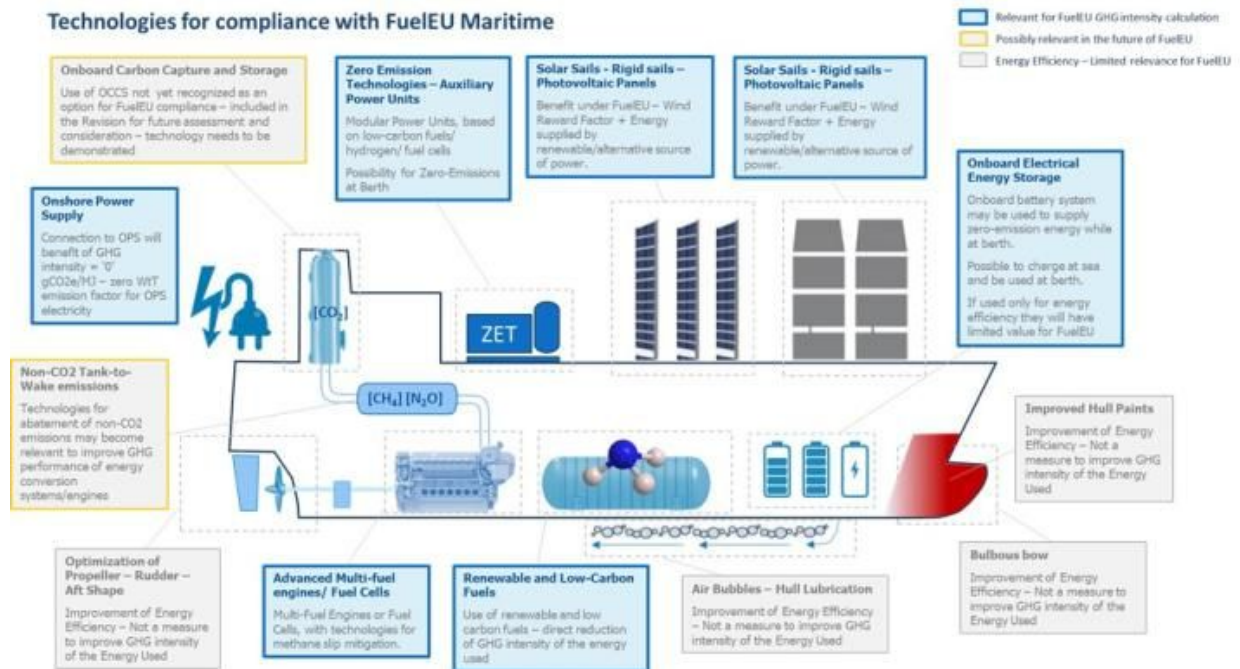
Implications for the Maritime Industry

The introduction of FuelEU Maritime presents several challenges and opportunities for industry stakeholders:

- **Fuel Management:** Operators must carefully consider their fuel mix to avoid penalties, potentially leading to increased demand for biofuels and other sustainable alternatives.
- **Operational Complexity:** The need to monitor and manage fuel mix across voyages adds a new layer of complexity to maritime operations.
- **Financial Considerations:** Investments in cleaner technologies and potential penalties may impact the industry's financial landscape.
- **Collaboration Imperative:** Success in this new regulatory environment requires enhanced cooperation between shipowners, operators, and managers.

- Data Management:** Accurate tracking, reporting, and verification of fuel use and emissions become critical for compliance, as is obtaining data on the sustainable fuel certification.

By increasing their use of biofuels in the short term, vessel owners will likely be able to postpone capital expenditures to their fleets to achieve compliance. However, as the requirements of FuelEU Maritime become more stringent over time, vessel owners will want to consider capex projects such as retrofits, new propulsion systems and wind assisted propulsion. See the chart below for more details.



Vicarious liability for ISMs and vessel owners

The penalties under FuelEU Maritime will be assessed against the International Safety Management (ISM) company, which may or may not be the vessel owner. However, it is the operator—often not the vessel owner—who is responsible for managing the vessel on its voyage. This leads to the situation of “vicarious liability,” which occurs when an individual or organization is held accountable for the actions of others. In this common maritime scenario, the vessel owner is liable for the actions of the operator (or the crew).

A vessel owner may not have control over bunkering decisions that are made. The operator of the vessel would select the time and location for the next bunkering stop based on the itinerary, while the crew on board would have the decision of which actual bunkers to lift.

One solution to this issue is to provide the vessel owner and operator a collaborative platform where they each can have visibility into decisions that are made on each voyage. By providing visibility into the vessel’s itinerary, position, daily consumption and weather conditions both the vessel owner and operator can avoid post-voyage surprises and take decisions that minimize or eliminate penalties.

OrbitMI: Your Partner in FuelEU Maritime Compliance

OrbitMI is developing a range of solutions designed to help maritime stakeholders navigate the complexities of FuelEU Maritime. We have prioritized certain use cases based on their immediate relevance and our customers' highest priority needs. Our development roadmap reflects this strategic approach, with some features already available and others planned for future implementation.

Current Use Cases

- **Voyage Lifecycle Planning and Monitoring**
 - Predict the impact of bunkering decisions on carbon intensity thresholds in pre-fixturing planning
 - Monitor operational decisions during voyages
 - Track, report, and ensure compliance post-voyage
 - Generate post-voyage insights for continuous improvement and informed future bunkering decisions
- **Collaboration Platform**
 - Facilitate seamless communication between vessel owners, operators, and managers

- Ensure all parties have visibility into decisions affecting FuelEU compliance
- **Simulation and Optimization**
 - Estimate FuelEU exposure and impact by vessel, voyage, or fleet
 - Optimize routes and bunkering strategies to minimize penalties
- **Data Transmission and Verification**
 - Streamline the collection, verification, and transmission of compliance data
 - Integrate with existing systems like VeriSTAR Green for efficient reporting

On the Roadmap

- **Pooling and Book-and-Claim Management**
 - Manage pooled vessels efficiently
 - Facilitate book-and-claim transactions to optimize compliance strategies
- **Electronic Ledger**
 - Centralize and organize all documentation including fuel certificates and bunker delivery notices (BDN)

OrbitMI is committed to evolving our platform to meet the changing needs of the maritime industry. We continuously assess and prioritize new features and use cases based on regulatory developments, customer feedback, and market trends.

Bureau Veritas and OrbitMI: Digital Solutions for your Decarbonisation Journey

To help its clients advance their decarbonization journey with digitalization, Bureau Veritas has partnered with OrbitMI. Companies navigating through the Fit for 55 package will need to align commercial goals, such as profitability, with environmental goals – mainly reducing emissions. As such, the needs of charterers and vessel owners become better aligned. The OrbitMI platform provides solutions that can facilitate collaboration between both parties.

Digital technologies can improve the quality of data collection and transmission, amplifying the power of shared information. By putting data in context with digital tools, key metrics including weather readings, engine status and hull fooling conditions, can translate to improved vessel performance. Through its partnership with OrbitMI, Bureau Veritas heightens its support of shipowners making data-based decisions about the right short- and long-term solutions for reducing emissions.

The Importance of data quality

OrbitMI has positioned data quality as the cornerstone of its operations and service offerings. This commitment is driven by the recognition that in the maritime industry, high-quality, timely, and actionable data is crucial for efficiency, safety, and profitability.

Key aspects of OrbitMI's approach to data quality include:

1. **Data Transformation:** OrbitMI transforms raw maritime data into actionable insights, likening the process to refining crude oil into valuable products.
2. **High-Quality Data Sources:** The company integrates world-class data feeds and engages in hand-crafted curation to ensure comprehensive and accurate information.
3. **Intelligent Connected Workflows:** These workflows leverage AI and machine learning to create seamless, efficient processes that enhance data quality at every step.
4. **User-Friendly Data Input:** Orbit Reporter, the company's noon event reporting application, focuses on user-friendliness and robust validation to ensure high-quality data entry.
5. **Advanced Data Processing:** Sophisticated AI and machine learning algorithms are employed for error detection, correction, and continuous improvement of data quality.
6. **Regulatory Compliance:** OrbitMI ensures its data management practices meet or exceed relevant regulatory standards, including GDPR and SOC 2 compliance.
7. **Strategic Integrations with compliance platforms:** Partnerships with classification societies like Bureau Veritas VeriSTAR Green and DNV Veracity, and other platforms, further enhance data accuracy and streamline regulatory processes.

The impact of this commitment to data quality is significant, leading to improved decision-making in chartering and operations, enhanced vessel performance monitoring, and better collaboration across teams. Looking ahead, OrbitMI plans to continue innovating in areas such as advanced AI and machine learning, expanded data sources, enhanced data visualization, edge computing, and sustainability-focused data capabilities. By transforming maritime data into high-grade, actionable insights, OrbitMI aims to drive a fundamental transformation of the maritime industry, enhancing efficiency, sustainability, and success across the global shipping sector.

Conclusion and Call to Action

FuelEU Maritime represents a significant shift in the regulatory landscape of the maritime industry. As the sector adapts to these new requirements, the need for intelligent, data-driven solutions has never been greater. OrbitMI stands ready to help you turn this challenge into an opportunity for operational excellence and environmental leadership.

Take the first step towards FuelEU Maritime compliance:

1. Schedule a demo to see OrbitMI's FuelEU solutions in action
2. Learn more about Orbit Reporter
 - a. <https://www.orbitmi.com/a-vision-for-noon-reporting>
3. Speak with our experts to assess your specific needs and challenges

Don't navigate these new waters alone. Partner with OrbitMI and chart a course for success in the sustainable shipping era.

Contact us today:

- Email: info@orbitmi.com
- Website: www.orbitmi.com

Appendix: Alternative mechanisms to compliance

Borrow and bank

There is a mechanism to borrow and bank credits year over year based on the achieved compliance balance. There are restrictions on what can be borrowed in two consecutive periods.

Vessels can bank their compliance surplus within a given reporting period for the following period or borrow an advance compliance surplus from the following reporting period to make up for a deficit. However, this mechanism is only granted with the verifier's approval and is not applicable to:

- Amounts exceeding the GHG intensity limit multiplied by the vessel's energy consumption by more than 2%
- Two consecutive reporting periods

When a vessel is not compliant during the reporting period and has borrowed an advance compliance surplus in the previous reporting period, the shipping company will have to pay a remedial penalty.

Pooling

There is also a pooling mechanism which allows owners to operate their own vessels as a group and average GHG intensity across the entire fleet. For example, an over compliant vessel operating on alternative fuels can compensate the compliance deficit of other vessels in a pool.

This dynamic applies even when vessels are controlled by more than one company. Multiple verified vessels may pool their compliance balance to achieve compliance per individual vessel, with some restrictions:

- Vessel's compliance can only be included in one pool per reporting period
- The vessel that uses the borrowing mechanism during year n-1 cannot be in a pool during year n
- The total pooled compliance must be positive; vessels that had a compliance deficit cannot have this increase as a result of the allocated pooled compliance
- Vessels that had a compliance surplus cannot have a deficit because of the allocated pooled compliance

For a more detailed look at these alternatives, please visit: [Flexibilities to Comply With Fuel EU Maritime - Banking | Marine & Offshore \(bureauveritas.com\)](https://www.bureauveritas.com/en/industry/eu-maritime-banking-marine-offshore)



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