

**ANNEX 15**

**RESOLUTION MEPC.353(78)  
(adopted on 10 June 2022)**

**2022 GUIDELINES ON THE REFERENCE LINES FOR USE WITH OPERATIONAL  
CARBON INTENSITY INDICATORS (CII REFERENCE LINES GUIDELINES, G2)**

THE MARINE ENVIRONMENT PROTECTION COMMITTEE,

RECALLING Article 38(a) of the Convention on the International Maritime Organization concerning the functions of the Marine Environment Protection Committee (the Committee) conferred upon it by international conventions for the prevention and control of marine pollution from ships,

NOTING that the Committee adopted, at its seventy-sixth session, by resolution MEPC.328(76), the *2021 Revised MARPOL Annex VI*, which will enter into force on 1 November 2022,

NOTING IN PARTICULAR that the *2021 Revised MARPOL Annex VI* (MARPOL Annex VI) contains amendments concerning mandatory goal-based technical and operational measures to reduce carbon intensity of international shipping,

NOTING FURTHER that regulation 28.4 of MARPOL Annex VI requires reference lines to be established for each ship type to which regulation 28 is applicable,

NOTING that the Committee, at its seventy-sixth session, adopted, by resolution MEPC.337(76), *2021 Guidelines on the reference lines for use with operational carbon intensity indicators (CII Reference Lines Guidelines, G2)*

HAVING CONSIDERED, at its seventy-eighth session, the draft *2022 Guidelines on the reference lines for use with operational carbon intensity indicators (CII reference lines guidelines, G2)*,

1 ADOPTS the *2022 Guidelines on the reference lines for use with operational carbon intensity indicators (CII reference lines guidelines, G2)*, as set out in the annex to the present resolution;

2 INVITES Administrations to take the annexed Guidelines into account when developing and enacting national laws which give force to and implement requirements set forth in regulation 28.4 of MARPOL Annex VI;

3 REQUESTS the Parties to MARPOL Annex VI and other Member Governments to bring the annexed Guidelines to the attention of masters, seafarers, shipowners, ship operators and any other interested parties;

4 AGREES to keep the Guidelines under review in light of experience gained with their implementation, also taking into consideration that in accordance with regulation 28.11 of MARPOL Annex VI a review of the operational measures to reduce carbon intensity of international shipping shall be completed by 1 January 2026;

5        REVOKES the *2021 Guidelines on the reference lines for use with operational carbon intensity indicators (CII Reference Lines Guidelines, G2)*.

## ANNEX

### 2022 GUIDELINES ON THE REFERENCE LINES FOR USE WITH OPERATIONAL CARBON INTENSITY INDICATORS (CII REFERENCE LINES GUIDELINES, G2)

#### 1 Introduction

1.1 These Guidelines provide the methods to calculate the reference lines for use with operational carbon intensity indicators, and the ship type specific carbon intensity reference lines as referred to in regulation 28 of MARPOL Annex VI.

1.2 One reference line is developed for each ship type to which regulation 28 of MARPOL Annex VI applies, based on the specific indicators stipulated in *2022 Guidelines on operational carbon intensity indicators and the calculation methods* (G1) developed by the Organization, ensuring that only data from comparable ships are included in the calculation of each reference line.

#### 2 Definition

2.1 *MARPOL* means the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocols of 1978 and 1997 relating thereto, as amended.

2.2 *IMO DCS* means the data collection system for fuel oil consumption of ships referred to in regulation 27 and related provisions of MARPOL Annex VI.

2.3 For the purpose of these Guidelines, the definitions in MARPOL Annex VI, as amended, apply.

2.4 An operational carbon intensity indicator (CII) reference line is defined as a curve representing the median attained operational carbon intensity performance, as a function of Capacity, of a defined group of ships in year of 2019.

#### 3 Method to develop the CII reference lines

3.1 Given the limited data available for the year of 2008, the operational carbon intensity performance of ship types in year 2019 is taken as the reference.

3.2 For a defined group of ships, the reference line is formulated as follows:

$$CII_{ref} = aCapacity^{-c} \quad (1)$$

where  $CII_{ref}$  is the reference value of year 2019,  $Capacity$  is identical with the one defined in the specific carbon intensity indicator (CII) for a ship type, as shown in Table. 1;  $a$  and  $c$  are parameters estimated through median regression fits, taking the attained CII and the Capacity of individual ships collected through IMO DCS in year 2019 as the sample.

#### 4 Ship type specific operational carbon intensity reference lines

The parameters for determining the ship type specific reference lines, for use in Eq.(1), are specified as follows:

**Table 1: Parameters for determining the 2019 ship type specific reference lines**

| Ship type                             |                                                 | Capacity | <i>a</i> | <i>c</i> |
|---------------------------------------|-------------------------------------------------|----------|----------|----------|
| Bulk carrier                          | 279,000 DWT and above                           | 279,000  | 4745     | 0.622    |
|                                       | less than 279,000 DWT                           | DWT      | 4745     | 0.622    |
| Gas carrier                           | 65,000 and above                                | DWT      | 14405E7  | 2.071    |
|                                       | less than 65,000 DWT                            | DWT      | 8104     | 0.639    |
| Tanker                                |                                                 | DWT      | 5247     | 0.610    |
| Container ship                        |                                                 | DWT      | 1984     | 0.489    |
| General cargo ship                    | 20,000 DWT and above                            | DWT      | 31948    | 0.792    |
|                                       | less than 20,000 DWT                            | DWT      | 588      | 0.3885   |
| Refrigerated cargo carrier            |                                                 | DWT      | 4600     | 0.557    |
| Combination carrier                   |                                                 | DWT      | 5119     | 0.622    |
| LNG carrier                           | 100,000 DWT and above                           | DWT      | 9.827    | 0.000    |
|                                       | 65,000 DWT and above, but less than 100,000 DWT | DWT      | 14479E10 | 2.673    |
|                                       | less than 65,000 DWT                            | 65,000   | 14779E10 | 2.673    |
| Ro-ro cargo ship<br>(vehicle carrier) | 57,700 GT and above                             | 57,700   | 3627     | 0.590    |
|                                       | 30,000 GT and above, but less than 57,700 GT    | GT       | 3627     | 0.590    |
|                                       | Less than 30,000 GT                             | GT       | 330      | 0.329    |
| Ro-ro cargo ship                      |                                                 | GT       | 1967     | 0.485    |
| Ro-ro passenger ship                  | Ro-ro passenger ship                            | GT       | 2023     | 0.460    |
|                                       | High-speed craft designed to SOLAS chapter X    | GT       | 4196     | 0.460    |
| Cruise passenger ship                 |                                                 | GT       | 930      | 0.383    |

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