ABS Global Sustainability Center

Fleet Benchmarking to 2023 IMO Strategy on Reduction of GHG Emissions from Ships

Contships Logistics Corp.

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American Bureau of Shipping
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Nomenclature

AER	Annual Efficiency Ratio
D/G	Diesel Generator
GHG	Green House Gas
M/E	Main Engine
SFOC	Specific Fuel Oil Consumption

1 Introduction

ABS is committed to being a recognized leader for new technology development and assessment, and for serving as a trusted technical advisor to the marine industry. These pillars have formed the foundation for the success of ABS for more than 150 years, and, more importantly, position the organization to provide the practical solutions needed for the future. With nearly 3,500 technical professionals positioned around the world, the ABS team has the experience, knowledge and professional judgment to assist our members and clients in developing their marine projects worldwide.

Ship emissions have become an increasingly important factor to vessel owners, both air emissions and discharges to the sea. The mounting regulatory pressure combined with Charterers making decisions regarding which vessels to charter and ports providing incentives for cleaner vessels has led to the need to monitor and record emissions. This monitoring can be used both as proof and a source of data for improvement.

For Contships Management Inc. (Contships), ABS has derived:

- 2008 Fleet Emissions Baseline
- Fleet Benchmarking:
    - Carbon Intensity as AER
    - GHG Emissions as Carbon Emissions
    - GHG Intensity.

2 Assumptions

For the AER calculations, the assumptions applied in the calculations are listed below:

- **Speed Increase**: The operating profile in 2008 differed from the profile in 2024. This is mainly due to the higher speeds used by the vessels at the time. Records show that vessels may have sailed at 89% of design speed in 2008, dropping to 75% or lower in the following years. With this drop in speed, we expect a decrease in consumption and a decrease in annual distance sailed (two factors influencing the AER).
  The resultant decrease in AER can be approximated using the cube of the speed difference ratio. With Contships implementing a policy of slow steaming, the average speed based on the DCS data provided has been found to correspond to very low speeds for 2024 (for example 6.4 to 12.1 knots), with an average of 10.5 knots. For this reason, a speed drop of between 0.5 and 1.5 knots is applied over the 2008-2024 period depending on the age of the vessels (with a lower drop for a younger ship).
- **Hull cleaning**: Contships have stated that they perform regular hull-cleaning based on the condition of the hull, which limits the amount of fouling on the hull of their vessels. A correction was allowed for the low frequency hull cleaning in 2008, with most vessels sailing with an increased hull roughness at the time.
- **SFOC Difference 2008-2024**: An estimation of the efficiency increases of M/E over the period 2008 to 2024 needs to look at two distinct cases:
  - Vessels with De-rating/Low-Load tuning show a large improvement in SFOC compared to conventional M/Es. Records have shown that a 3% to 4% increase is possible for vessels fitted with these engines. Contships, have stated that none of their engines have been de-rated, so this has not been considered.
  - For vessels with conventional engines, changing from Tier I to Tier II results in decreased emissions but only a small decrease in SFOC. Records have shown that for Electronic Engines a 1.5% increase in the AER compared to conventional M/E is possible.
- **Hull Optimization:** Regarding hull optimization, between 2008 and 2024 specifications from similar designs have shown that a reduction of the required propulsion power by 15%. However, it is considered that part of this reduction is already covered by the previous items and the values in the specification reflect this (lower design speed, optimized M/E for this new speed, etc.). As such a remaining 5% reduction is applied for the improvement in hull efficiency.
- **Optimized D/G usage at sea:** Increased crew training, lower vessel speeds and better power management systems have led to the frequent usage of one diesel generator, compared to the two diesel generators running during most sea passages in 2008. Records have shown an estimated 7% saving for 20% of the time.
- **LED Lights:** Replacing all bulbs (where possible) with LEDs leads to a small gain of 0.1% to 0.4% depending on ship type. Records have shown that for similar vessels a 0.1% has been achieved.

3 Vessel Calculations

The calculations are based on the Annual Efficiency Ratio (AER) for all voyages performed over 2024. The efficiency improvements for the period 2008-2024 (as shown in chapter 2) are quantified and rolled-back to 2008 levels. The typical operating profile for 2008 has been applied.

Vessel Data								
Vessel	IMO Number	Type	DWT	Flag	Class	Engine Model	Shipbuilder	Built
Contship Ace	9348637	Container Ship	18091	Liberia	RINA	WARTSILA 9L46D	Barreras	2008
Contship Air	9364356	Container Ship	13715	Cyprus	RINA	MAN B&W 7L58/64	Qingshan Shipyard	2006
Contship Art	9664275	Container Ship	13063	Cyprus	LR	MAN STX 6S46ME-B	Jiangsu Yangzijiang Shipyard Co., Ltd.	2014
Contship Box	9449845	Container Ship	21206	Liberia	RINA	MAN B&W 8L58/64 CD	Zhejiang Ouhua Shipbuilding Co.	2006
Contship Cub	9683477	Container Ship	13572	Liberia	DNV	MAN B&W 8L48/60CR	Sainty Shipbuilding Yangzhou Corp. Ltd.	2013
Contship Cup	9509803	Container Ship	21281	Cyprus	DNV	MAN B&W 8L58/64 CD	Zhejiang Ouhua Shipbuilding Co.	2012
Contship Day	9509786	Container Ship	21250	Cyprus	RINA	MAN B&W 8L58/64 CD	Zhejiang Ouhua Shipbuilding Co.	2010
Contship Don	9347956	Container Ship	13797	Liberia	BV	MAN B&W 7L58/64	Yangzhou Dayang Shipbuilding	2006
Contship Eco	9492751	Container Ship	9907	Liberia	LR	PIELSTICK 8PC2-6/2L	Zhejiang Zhenxing Shiprepair	2008
Contship Era	9507702	Container Ship	13874	Liberia	BV	MAN B&W 7L58/64 CD	Qingshan Shipyard	2009
Contship Fox	9507714	Container Ship	13874	Cyprus	BV	MAN B&W 7L58/64 CD	Qingshan Shipyard	2009
Contship Fun	9308613	Container Ship	11836	Liberia	RINA	MAN B&W 8L48/60B	Zhoushan Shipyard	2006
Contship Gem	9491599	Container Ship	11768	Cyprus	RINA	MAN B&W 8L48/60B	Zhoushan Shipyard	2010
Contship Gin	9517434	Container Ship	17158	Liberia	RINA	STX MAN B&W 8S50 ME-C MK7	Jiangsu Yangzijiang Shipyard Co., Ltd.	2011
Contship Ice	9517422	Container Ship	17191	Cyprus	BV	STX MAN B&W 8S50 ME-C MK7	Jiangsu Yangzijiang Shipyard Co., Ltd.	2011
Contship Ivy	9371402	Container Ship	12508	Cyprus	DNV	MAN B&W 8L48/60B [K]	Naval Gijon, S.A.	2007
Contship Jet	9348625	Container Ship	18108	Liberia	RINA	WARTSILA 9L46D	Barreras	2007
Contship Joy	9349174	Container Ship	12611	Liberia	RINA	MAN B&W 8L48/60B [K]	Naval Gijon, S.A.	2007
Contship Key	9338278	Container Ship	13760	Cyprus	RINA	MAN B&W 6S50-MC-C	Jiangsu Eastern Shipyard Co., Ltd.	2007
Contship Leo	9403451	Container Ship	13803	Cyprus	BV	MAN B&W 7L58/64 CD	Taizhou Kouan Shipbuilding Co Ltd	2008
Contship Lex	9346562	Container Ship	13760	Liberia	BV	MAN B&W 7L58/64	CSC Jiangdong Shipyard	2006
Contship Luv	9406934	Container Ship	13760	Liberia	RINA	MAN B&W 7L58/64 CD	Nanjing Jinling Shipyard	2008
Contship Med	9306249	Container Ship	13872	Liberia	BV	MAN B&W 7L58/64	Nanjing Jinling Shipyard	2004
Contship New	9373905	Container Ship	13760	Cyprus	RINA	MAN B&W 7L58/64 CD	Kouan Shipbuilding Industry Co.	2007
Contship Oak	9373917	Container Ship	13781	Liberia	RINA	MAN B&W 7L58/64 CD	Kouan Shipbuilding Industry Co.	2007
Contship Ono	9324978	Container Ship	13803	Liberia	BV	MAN B&W 7L58/64	Nanjing Jinling Shipyard	2007
Contship Pax	9435521	Container Ship	13720	Cyprus	RINA	MAN B&W 7L58/64 CD	Yangzhou Dayang Shipbuilding	2008
Contship Ray	9388338	Container Ship	13760	Liberia	DNV	MAN B&W 7L58/64 CD	Jinling Shipyard	2008
Contship Run	9306237	Container Ship	20955	Liberia	RINA	WARTSILA, 7 RT-flex60C (MKII)	Jiangsu Yangzijiang Shipyard Co., Ltd.	2007
Contship Sea	9306213	Container Ship	20993	Liberia	RINA	WARTSILA, 7 RT-flex60C (MKII)	Jiangsu Yangzijiang Shipyard Co., Ltd.	2007
Contship Sky	9403449	Container Ship	13803	Liberia	RINA	MAN B&W 7L58/64 CD	Taizhou Kouan Shipbuilding Co Ltd	2008
Contship Sun	9347815	Container Ship	11821	Liberia	DNV	MAN B&W 8L48/60B	Zhoushan Shipyard	2007
Contship Ten	9347982	Container Ship	13699	Cyprus	RINA	MAN B&W 7L58/64	Yangzhou Dayang Shipbuilding	2007
Contship Top	9395616	Container Ship	13750	Liberia	DNV	MAN B&W 7L58/64 CD	Qingshan Shipyard	2008
Contship Uno	9379026	Container Ship	13834	Liberia	RINA	MAN B&W 7L58/64 CD	Qingshan Shipyard	2007
Contship Vie	9434802	Container Ship	13699	Cyprus	BV	MAN B&W 7L58/64 CD	Yangzhou Dayang Shipbuilding	2007
Contship Vow	9395599	Container Ship	13750	Liberia	DNV	MAN B&W 7L58/64 CD	Qingshan Shipyard	2007
Contship Way	9435533	Container Ship	13720	Cyprus	RINA	MAN B&W 7L58/64 CD	Yangzhou Dayang Shipbuilding	2008
Contship Win	9395604	Container Ship	13809	Cyprus	DNV	MAN B&W 7L58/64 CD	Qingshan Shipyard	2008
Contship Yen	9664263	Container Ship	13102	Cyprus	LR	MAN STX 6S46ME-B	Jiangsu New Yangzi Shipbuilding Co., Ltd.	2014
Contship Zen	9683491	Container Ship	13555	Liberia	DNV	MAN B&W 8L48/60CR	Sainty Shipbuilding Yangzhou Corp. Ltd.	2014
Contship Zoe	9434797	Container Ship	13758	Cyprus	RINA	MAN B&W 7L58/64 CD	Yangzhou Dayang Shipbuilding	2007

The data from 2024 voyage data and the 2024 Well-to-Wake AER:

Vessel Data			Voyage data											
				CO2 Emitted										
Vessel	DWT	Built	Year	Diesel/Gas Oil	LFO	HFO	LPG (Propane)	LPG (Butane)	LNG	Methanol	Ethanol	Other	CO2 (t)	AER (CO2 g/t-nm)
Contship Ace	18091	2008	2024	3994	2937	13545	0	0	0	0	0	0	20,475	24.19
Contship Air	13715	2006	2024	2844	11884	9311	0	0	0	0	0	0	24,038	23.38
Contship Art	13063	2014	2024	3703	5020	9657	0	0	0	0	0	0	18,380	20.59
Contship Box	21206	2006	2024	4790	4269	6451	0	0	0	0	0	0	15,511	21.83
Contship Cub	13572	2013	2024	3310	138	9254	0	0	0	0	0	0	12,701	38.48
Contship Cup	21281	2012	2024	90	643	1610	0	0	0	0	0	0	2,343	17.59
Contship Day	21250	2010	2024	338	0	7833	0	0	0	0	0	0	8,171	20.90
Contship Don	13797	2006	2024	2053	2867	10129	0	0	0	0	0	0	15,049	24.78
Contship Eco	9907	2008	2024	2029	4010	4664	0	0	0	0	0	0	10,703	21.44
Contship Era	13874	2009	2024	2	12909	7933	0	0	0	0	0	0	20,844	23.28
Contship Fox	13874	2009	2024	2165	9639	7661	0	0	0	0	0	0	19,466	20.57
Contship Fun	11836	2006	2024	13103	0	3681	0	0	0	0	0	0	16,784	30.25
Contship Gem	11768	2010	2024	3278	6996	9123	0	0	0	0	0	0	19,397	28.99
Contship Gin	17158	2011	2024	6161	6901	8073	0	0	0	0	0	0	21,135	21.17
Contship Ice	17191	2011	2024	26	16607	5757	0	0	0	0	0	0	22,390	21.74
Contship Ivy	12508	2007	2024	2868	9099	6854	0	0	0	0	0	0	18,821	30.69
Contship Jet	18108	2007	2024	5030	3437	12508	0	0	0	0	0	0	20,975	20.26
Contship Joy	12611	2007	2024	2741	1354	15265	0	0	0	0	0	0	19,360	30.47
Contship Key	13760	2007	2024	74	0	11364	0	0	0	0	0	0	11,438	20.60
Contship Leo	13803	2008	2024	2817	11641	4961	0	0	0	0	0	0	19,419	24.60
Contship Lex	13760	2006	2024	433	618	15494	0	0	0	0	0	0	16,545	25.40
Contship Luv	13760	2008	2024	2912	2025	14937	0	0	0	0	0	0	19,874	27.30
Contship Med	13872	2004	2024	280	2084	3312	0	0	0	0	0	7970	13,646	26.47
Contship New	13760	2007	2024	1431	779	9903	0	0	0	0	0	0	12,114	26.52
Contship Oak	13781	2007	2024	2196	793	8091	0	0	0	0	0	0	11,080	32.33
Contship Ono	13803	2007	2024	243	0	17390	0	0	0	0	0	0	17,632	23.71
Contship Pax	13720	2008	2024	2170	0	8724	0	0	0	0	0	0	10,893	32.04
Contship Ray	13760	2008	2024	3321	0	7491	0	0	0	0	0	0	10,812	32.43
Contship Run	20955	2007	2024	7033	4359	6545	0	0	0	0	0	0	17,937	18.86
Contship Sea	20993	2007	2024	5727	6587	5454	0	0	0	0	0	0	17,768	18.52
Contship Sky	13803	2008	2024	874	16188	0	0	0	0	0	0	0	17,062	25.78
Contship Sun	11821	2007	2024	2523	1319	8103	0	0	0	0	0	0	11,945	41.88
Contship Ten	13699	2007	2024	49	0	21762	0	0	0	0	0	0	21,811	25.57
Contship Top	13750	2008	2024	4848	161	8759	0	0	0	0	0	0	13,767	24.92
Contship Uno	13834	2007	2024	94	0	17617	0	0	0	0	0	0	17,711	22.51
Contship Vie	13699	2007	2024	566	1497	6107	0	0	0	0	0	0	8,170	43.09
Contship Vow	13750	2007	2024	2767	0	13343	0	0	0	0	0	0	16,110	26.18
Contship Way	13720	2008	2024	467	2448	14076	0	0	0	0	0	4204	21,196	21.20
Contship Win	13809	2008	2024	0	6298	20830	0	0	0	0	0	0	27,128	24.05
Contship Yen	13102	2014	2024	1	3094	13224	0	0	0	0	0	0	16,319	19.35
Contship Zen	13555	2014	2024	3337	0	12663	0	0	0	0	0	0	15,999	40.55
Contship Zoe	13758	2007	2024	1397	3668	13274	0	0	0	0	0	0	18,340	22.20

The 2024 AER and calculated 2008 AER are shown here:

Vessel Data							
Vessel	DWT	Built	Year	CO2 (t)	AER (CO2 g/t-nm)	2008 AER	Difference
Contship Ace	18091	1905	2024	20,475	24.19	34.46	29.8%
Contship Air	13715	1905	2024	24,038	23.38	32.50	28.1%
Contship Art	13063	1905	2024	18,380	20.59	30.45	32.4%
Contship Box	21206	1905	2024	15,511	21.83	31.57	30.9%
Contship Cub	13572	1905	2024	12,701	38.48	56.96	32.4%
Contship Cup	21281	1905	2024	2,343	17.59	24.82	29.1%
Contship Day	21250	1905	2024	8,171	20.90	30.23	30.9%
Contship Don	13797	1905	2024	15,049	24.78	34.48	28.1%
Contship Eco	9907	1905	2024	10,703	21.44	29.81	28.1%
Contship Era	13874	1905	2024	20,844	23.28	32.37	28.1%
Contship Fox	13874	1905	2024	19,466	20.57	29.31	29.8%
Contship Fun	11836	1905	2024	16,784	30.25	43.10	29.8%
Contship Gem	11768	1905	2024	19,397	28.99	40.34	28.1%
Contship Gin	17158	1905	2024	21,135	21.17	29.84	29.1%
Contship Ice	17191	1905	2024	22,390	21.74	30.65	29.1%
Contship Ivy	12508	1905	2024	18,821	30.69	42.71	28.1%
Contship Jet	18108	1905	2024	20,975	20.26	28.17	28.1%
Contship Joy	12611	1905	2024	19,360	30.47	42.41	28.1%
Contship Key	13760	1905	2024	11,438	20.60	28.67	28.1%
Contship Leo	13803	1905	2024	19,419	24.60	35.09	29.9%
Contship Lex	13760	1905	2024	16,545	25.40	36.23	29.9%
Contship Luv	13760	1905	2024	19,874	27.30	38.94	29.9%
Contship Med	13872	1905	2024	13,646	26.47	37.75	29.9%
Contship New	13760	1905	2024	12,114	26.52	36.91	28.1%
Contship Oak	13781	1905	2024	11,080	32.33	44.99	28.1%
Contship Ono	13803	1905	2024	17,632	23.71	33.00	28.1%
Contship Pax	13720	1905	2024	10,893	32.04	44.59	28.1%
Contship Ray	13760	1905	2024	10,812	32.43	45.13	28.1%
Contship Run	20955	1905	2024	17,937	18.86	26.59	29.1%
Contship Sea	20993	1905	2024	17,768	18.52	26.11	29.1%
Contship Sky	13803	1905	2024	17,062	25.78	36.77	29.9%
Contship Sun	11821	1905	2024	11,945	41.88	58.23	28.1%
Contship Ten	13699	1905	2024	21,811	25.57	35.58	28.1%
Contship Top	13750	1905	2024	13,767	24.92	34.64	28.1%
Contship Uno	13834	1905	2024	17,711	22.51	32.08	29.8%
Contship Vie	13699	1905	2024	8,170	43.09	61.46	29.9%
Contship Vow	13750	1905	2024	16,110	26.18	36.39	28.1%
Contship Way	13720	1905	2024	21,196	21.20	30.24	29.9%
Contship Win	13809	1905	2024	27,128	24.05	33.43	28.1%
Contship Yen	13102	1905	2024	16,319	19.35	29.33	34.0%
Contship Zen	13555	1905	2024	15,999	40.55	60.02	32.4%
Contship Zoe	13758	1905	2024	18,340	22.20	31.66	29.9%

When considering the overall CO2 emissions for the fleet and overall transport work, the following results are obtained:

	2008 CO2 g	2024 CO2 g	Transport Work	2008 AER	2024 AER	Var
TOTAL	977,819,958,236.50	691,257,589,570.00	28,317,968,299.28	34.53	24.41	29.3%

The 2024 GHG Intensity and calculated 2008 GHG Intensity are shown here:

Vessel Data								
Vessel	DWT	Built	Year	Energy MJ	g CO2e	GHG Intensity	2008 GHG Intensity	Difference
Contship Ace	18091	1905	2024	224,112,351	20,474,985,127	91.36	99.58	8.3%
Contship Air	13715	1905	2024	263,261,082	24,039,034,980	91.31	99.53	8.3%
Contship Art	13063	1905	2024	201,293,563	18,379,873,662	91.31	99.53	8.3%
Contship Box	21206	1905	2024	170,065,971	15,510,642,950	91.20	99.41	8.3%
Contship Cub	13572	1905	2024	139,046,841	12,700,934,616	91.34	99.56	8.3%
Contship Cup	21281	1905	2024	25,614,891	2,342,923,797	91.47	99.70	8.3%
Contship Day	21250	1905	2024	89,236,575	8,170,566,855	91.56	99.80	8.3%
Contship Don	13797	1905	2024	164,647,170	15,048,929,519	91.40	99.63	8.3%
Contship Eco	9907	1905	2024	117,247,395	10,702,924,578	91.28	99.50	8.3%
Contship Era	13874	1905	2024	228,105,179	20,845,175,349	91.38	99.61	8.3%
Contship Fox	13874	1905	2024	213,164,049	19,465,957,494	91.32	99.54	8.3%
Contship Fun	11836	1905	2024	184,761,242	16,784,205,856	90.84	99.02	8.3%
Contship Gem	11768	1905	2024	212,434,517	19,397,369,997	91.31	99.53	8.3%
Contship Gin	17158	1905	2024	231,737,691	21,135,086,881	91.20	99.41	8.3%
Contship Ice	17191	1905	2024	245,137,025	22,390,871,786	91.34	99.56	8.3%
Contship Ivy	12508	1905	2024	206,183,197	18,821,055,672	91.28	99.50	8.3%
Contship Jet	18108	1905	2024	229,707,604	20,974,518,336	91.31	99.53	8.3%
Contship Joy	12611	1905	2024	211,717,054	19,359,035,067	91.44	99.67	8.3%
Contship Key	13760	1905	2024	124,873,775	11,437,800,895	91.59	99.84	8.3%
Contship Leo	13803	1905	2024	212,818,822	19,419,682,483	91.25	99.46	8.3%
Contship Lex	13760	1905	2024	180,685,143	16,543,985,206	91.56	99.80	8.3%
Contship Luv	13760	1905	2024	217,377,594	19,873,142,932	91.42	99.65	8.3%
Contship Med	13872	1905	2024	62,089,493	5,675,758,455	91.41	99.64	8.3%
Contship New	13760	1905	2024	132,438,975	12,113,276,895	91.46	99.69	8.3%
Contship Oak	13781	1905	2024	121,243,044	11,079,483,493	91.38	99.61	8.3%
Contship Ono	13803	1905	2024	192,508,931	17,631,460,376	91.59	99.83	8.3%
Contship Pax	13720	1905	2024	119,171,741	10,893,074,028	91.41	99.63	8.3%
Contship Ray	13760	1905	2024	118,417,110	10,811,631,782	91.30	99.52	8.3%
Contship Run	20955	1905	2024	196,819,748	17,936,985,772	91.13	99.34	8.3%
Contship Sea	20993	1905	2024	194,918,723	17,768,272,843	91.16	99.36	8.3%
Contship Sky	13803	1905	2024	187,061,657	17,063,632,576	91.22	99.43	8.3%
Contship Sun	11821	1905	2024	130,744,036	11,944,269,656	91.36	99.58	8.3%
Contship Ten	13699	1905	2024	238,102,848	21,809,995,421	91.60	99.84	8.3%
Contship Top	13750	1905	2024	150,866,690	13,767,108,123	91.25	99.47	8.3%
Contship Uno	13834	1905	2024	193,356,244	17,710,660,059	91.60	99.84	8.3%
Contship Vie	13699	1905	2024	89,322,564	8,170,260,183	91.47	99.70	8.3%
Contship Vow	13750	1905	2024	176,184,407	16,109,115,125	91.43	99.66	8.3%
Contship Way	13720	1905	2024	185,657,463	16,991,676,141	91.52	99.76	8.3%
Contship Win	13809	1905	2024	296,413,084	27,127,644,409	91.52	99.76	8.3%
Contship Yen	13102	1905	2024	178,277,552	16,318,563,808	91.53	99.77	8.3%
Contship Zen	13555	1905	2024	175,044,580	15,998,612,443	91.40	99.62	8.3%
Contship Zoe	13758	1905	2024	200,524,604	18,339,283,476	91.46	99.69	8.3%

Fleet 2024 GHG Intensity	91.37
Fleet 2008 GHG Intensity	99.59
Difference	8.3%

4 Fleet Baseline & Benchmarking

At MEPC 80, the IMO adopted the 2023 Revised IMO Strategy on Reduction of GHG Emissions from Ships. The 2023 IMO GHG Strategy increases the levels of ambition compared to the Initial IMO Strategy on Reduction of GHG Emissions from Ships. The levels of ambition and indicative checkpoints shall consider the Well-to-Wake (WtW) GHG emissions of marine fuels, as addressed in the Guidelines on life cycle GHG intensity of marine fuels life-cycle analysis (LCA) Guidelines with the overall objective of reducing GHG emissions of international shipping without a shift to other sectors.
Levels of ambition directing the 2023 IMO GHG Strategy are as follows:

1. Carbon intensity of the ship to decline through further improvement of the energy efficiency for new ships, with the aim of strengthening the energy efficiency design requirements for ships.

2. Carbon intensity of international shipping to decline.
To reduce CO2 emissions per transport work, as an average across international shipping, by at least 40 percent by 2030, compared to 2008.

3. Uptake of zero or near-zero GHG emission technologies, fuels and/or energy sources to increase.
Uptake of zero or near-zero GHG emission technologies, fuels and/or energy sources to represent at least 5 percent, striving for 10 percent, of the energy used by international shipping by 2030.

4. GHG emissions from international shipping to reach net zero.
To peak GHG emissions from international shipping as soon as possible and to reach net-zero GHG emissions by or around 2050, considering different national circumstances while pursuing efforts towards phasing them out as called for in the vision consistent with the long-term temperature goal set out in Article 2 of the Paris Agreement.

In addition, the Committee established two indicative checkpoints to reach net-zero GHG emissions from international shipping:

1. To reduce the total annual GHG emissions from international shipping by at least 20 percent, striving for 30 percent in 2030, compared to 2008.

2. To reduce the total annual GHG emissions from international shipping by at least 70 percent, striving for 80 percent by 2040, compared to 2008

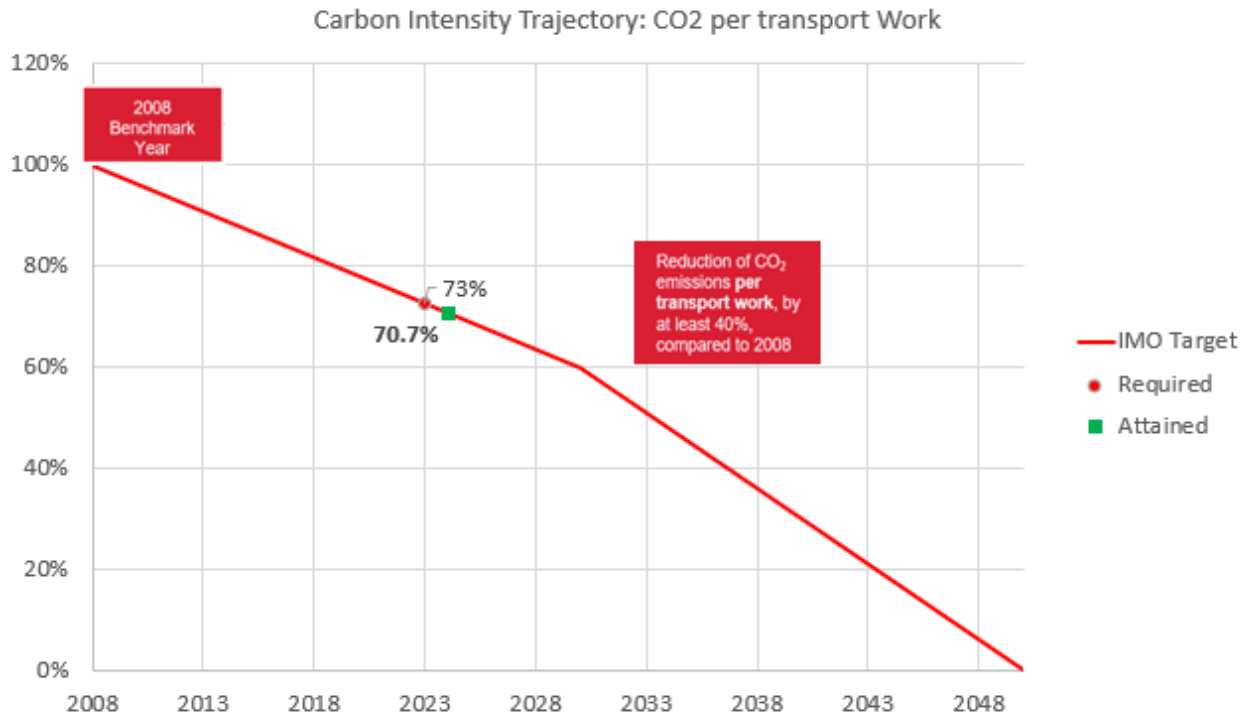
4.1 Carbon Intensity as AER

Based on the results from section 3.:

2008 Fleet Annual Efficiency Ratio (AER): 34.53 grams CO2 per tonne-mile
2024 Fleet Annual Efficiency Ratio (AER): 24.41 grams CO2 per tonne-mile

In that respect the **attained reduction is 29.3%** at end of 2024.

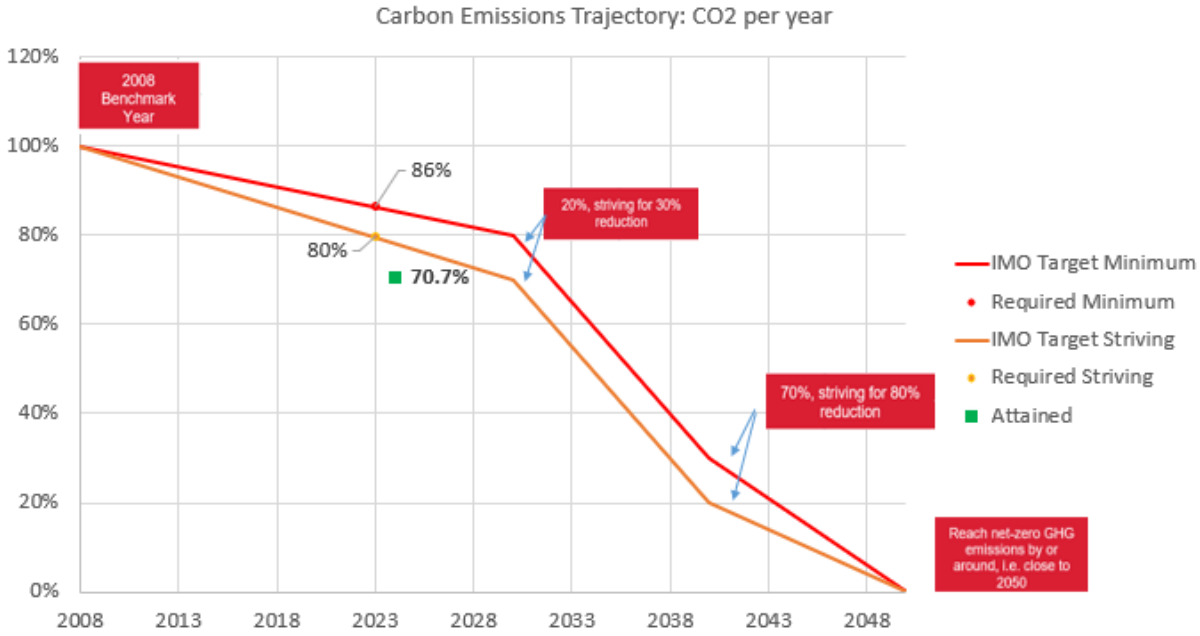
Based on the IMO Strategy, for the same period, the **required reduction is 27%.** Therefore, the target for 2024 has been achieved, see below.



4.2 GHG Emissions as Carbon Emissions

Based on the results from section 3, the **attained reduction is 29.3%** at end of 2024.

Based on the IMO Strategy, for the same period, the **required reductions are 14% and striving for 20%.**
Therefore, the target for 2024 has been achieved, see below.



4.3 GHG Intensity

Based on the results from section 3:

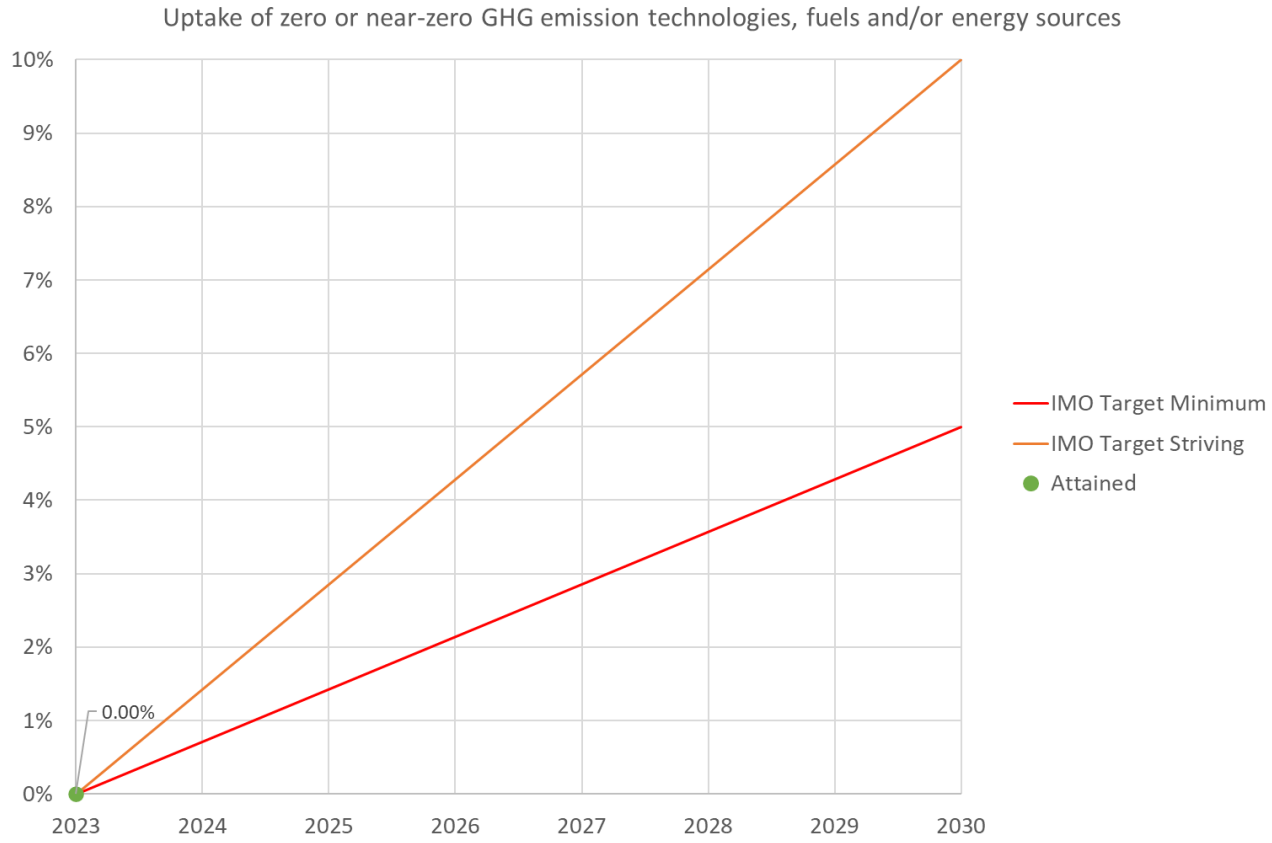
2008 Fleet GHG Intensity: 99.59 grams CO2e per MJ
2024 Fleet GHG Intensity: 91.37 grams CO2e per MJ

In that respect the **attained reduction is 8.3%** at end of 2024.

4.4 Uptake of zero or near-zero GHG energy

Based on the IMO Strategy, for the same period, the **required uptake of zero or near-zero GHG energy is 5% and striving for 10% by 2030.** A gradual uptake of biofuels or alternative fuels such as methanol or ammonia for selected vessels can be considered. See the paths below.

Contships has not yet implemented the use of any of these fuels yet, but as the requirements refer to 2030, this is not yet an issue.



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