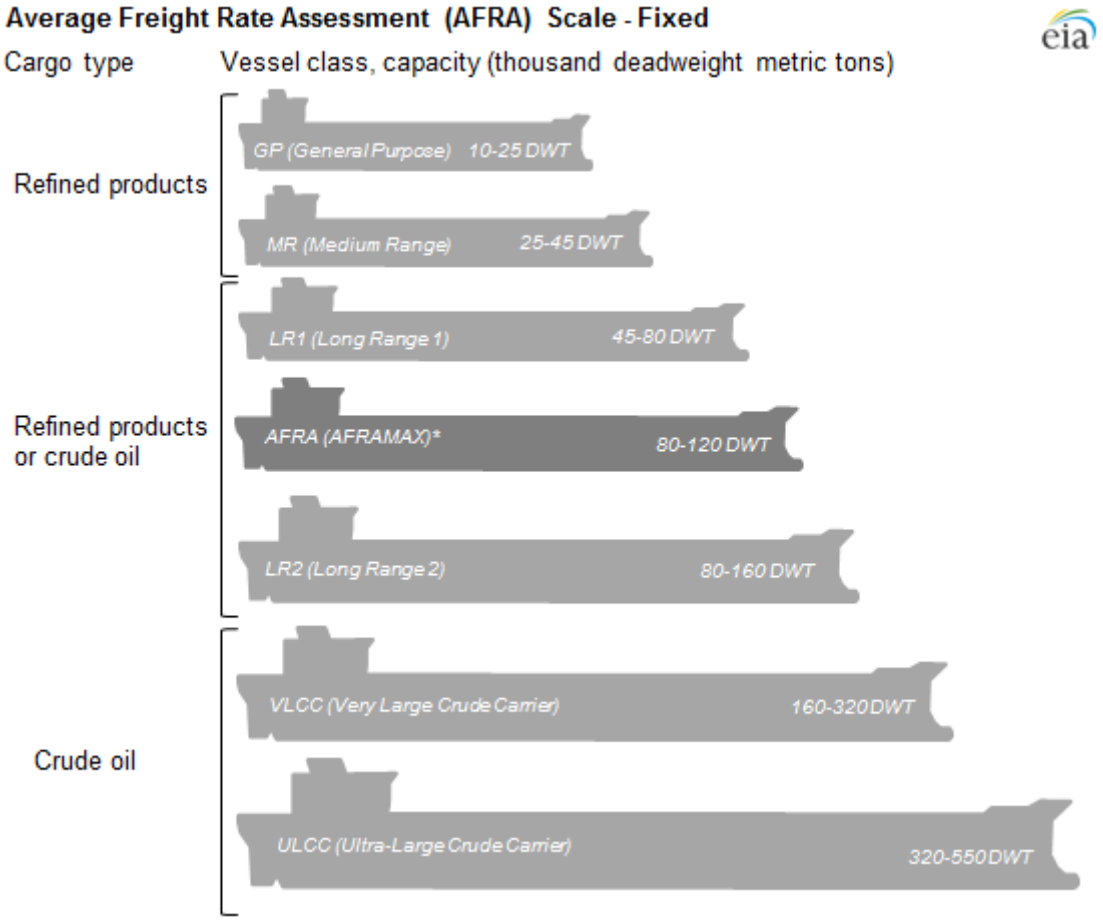
Oil tanker sizes range from general purpose to ultra-large crude carriers on AFRA scale

(Reference: Energy Information Administration)

Source: T. Mason Hamilton, U.S. Energy Information Administration-16 September 2014

The global crude oil and refined product tanker fleet uses a classification system to standardize contract terms, establish shipping costs, and determine the ability of ships to travel into ports or through certain straits and channels. This system, known as the Average Freight Rate Assessment (AFRA) system, was established by Royal Dutch Shell six decades ago, and is overseen by the London Tanker Brokers' Panel (LTBP), an independent group of shipping brokers.

AFRA uses a scale that classifies tanker vessels according to deadweight tons, a measure of a ship's capacity to carry cargo. The approximate capacity of a ship in barrels is determined by using an estimated 90% of a ship's deadweight tonnage, and multiplying that by a barrel per metric ton conversion factor specific to each type of petroleum product and crude oil, as liquid fuel densities vary by type and grade.



Source: U.S. Energy Information Administration, London Tanker Brokers' Panel

Note: AFRAMAX is not an official vessel classification on the AFRA scale but is shown here for comparison.

The smaller vessels on the AFRA scale, the General Purpose (GP) and Medium Range (MR) tankers, are commonly used to transport cargos of refined petroleum products over relatively shorter distances, such as from Europe to the U.S. East Coast. Their smaller size allows them to access most ports across the globe. A GP tanker can carry between 70,000 barrels and 190,000 barrels of motor gasoline (3.2-8 million gallons) and an MR tanker can carry between 190,000 barrels and 345,000 barrels (8-14.5 million gallons).

Long Range (LR) class ships are the most common in the global tanker fleet, as they are used to carry both refined products and crude oil. These ships can

access most large ports that ship crude oil and petroleum products. An LR1 tanker can carry between 345,000 barrels and 615,000 barrels of gasoline (14.5-25.8 million gallons) or between 310,000 barrels and 550,000 barrels of light sweet crude oil.

A classification used to describe a large portion of the global tanker fleet is AFRAMAX. AFRAMAX vessels refer to ships between 80,000 and 120,000 deadweight tons. This ship size is popular with oil companies for logistical purposes, and, therefore, many ships have been built within these specifications. Because the AFRAMAX range exists somewhere between the LR1 and LR2 AFRA scales, the LTBP does not publish a freight assessment specifically for AFRAMAX vessels.

Over the history of AFRA, vessels grew in size and newer classifications were added. The Very Large Crude Carrier (VLCC) and Ultra-Large Crude Carrier (ULCC) were added as the global oil trade expanded and larger vessels provided better economics for crude shipments. VLCCs are responsible for most crude oil shipments around the globe, including in the North Sea, home of the crude oil price benchmark Brent. A VLCC can carry between 1.9 million and 2.2 million barrels of a WTI type crude oil. With current WTI prices near $92 per barrel, a fully loaded VLCC could carry about $100 million dollars' worth of crude oil.

There are a small number of ULCC vessels currently in use, as their size requires special facilities limiting the number of places where these vessels can load and offload. These massive vessels can carry around 2 million barrels to 3.7 million barrels of crude oil. The only U.S. port that can handle such large vessels while fully loaded is the Louisiana Offshore Oil Port (LOOP).

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