Glossary

Annual contract quantity (ACQ): The quantity delivered in each contract year, as specified in a gas or LNG sales contract.

Annual delivery program (ADP): The annual program for the delivery and receipt of LNG cargoes. The ADP is usually agreed on between sellers and buyers before the beginning of each contract year.

Associated natural gas: Gas found mixed with oil in underground reservoirs. Associated natural gas comes out of solution as a by-product of oil production.

Baseload: The volume of gas designed to be delivered by a system that does not fluctuate significantly.

Boil-off or Boil-off gas: The gas produced when LNG in a storage vessel evaporates as heat leaks into the liquid. This vaporized gas can be recovered and used as energy. The evaporation process keeps the liquid cool and is called auto-refrigeration.

Burner tip: The ultimate point of consumption for natural gas.

Cargo containment system: The method of storing LNG in a ship.

Charterparty: A contractual agreement between a shipowner and a cargo owner, whereby a ship is chartered (hired) for a single voyage or over a period of time.

CIF (cost, insurance, and freight) contract: An LNG sales and purchase agreement in which the buyer of the LNG takes ownership either when the LNG is loaded onto the vessel or during the voyage to the receiving terminal. Payment is made at the time of the transfer of ownership; however, the seller remains responsible for the transportation and the transportation cost.

Combined-cycle gas turbine (CCGT): The combination of gas turbines with a waste heat recovery steam generator and a steam turbine in an electric power generation plant.

Compressed natural gas (CNG): Natural gas compressed under high pressures, usually between 3,000 and 3,600 psi. CNG may be used as a vehicle fuel.

Condensates: Hydrocarbon liquids, existing as vapor in a natural gas reservoir that condense to liquids as their temperature and pressure decrease during production. Natural gas condensates consist mainly of pentanes.
(C\textsubscript{4}H\textsubscript{12}) and heavier components. They are usually blended with crude oil for refining.

**Daily average sendout**: The total volume of natural gas delivered over a defined period of time divided by the total number of days in the period.

**Debottlenecking**: The process of increasing the capacity of a plant by making relatively minor modifications to individual systems.

**Deliverability**: The amount of natural gas that a well, field, pipeline, or distribution system can supply in a given period (typically 24 hours).

**Delivery at Place (DAP)**: Term used when the seller is providing the LNG shipping to the buyer’s facility.

**Delivery at Terminal (DAT)**: Term used when the seller is providing the LNG shipping to the buyer’s facility.

**Delivery Ex-ship (DES) contract**: An LNG sales and purchase agreement in which title to the LNG is transferred to the buyer when the LNG is unloaded at the receiving terminal and payment is made. The term DES has been replaced by DAP as per Incoterms® 2010.

**Deregulation**: The process of decreasing or eliminating government regulatory control over industries and allowing competitive forces to drive the market.

**Downstream**: Oil or gas operations that are closer to the end user (see upstream).

**Draft**: The vertical distance from the waterline to the lowest point of the ship, or stated another way, the least depth of water needed for the ship to float.

**Dry gas**: Natural gas that doesn’t contain liquid hydrocarbons.

**Engineering, procurement, and construction (EPC) contract**: The EPC contract defines the terms under which the detailed design, procurement, construction, and commissioning of an LNG export or import facility will be conducted.

**Exclusion zone**: An area surrounding an LNG plant in which an operator legally controls all activities. The exclusion zone creates a buffer in the event of an LNG incident. It provides thermal-radiation protection from fires and flammable vapor-dispersion protection from un-ignited vapor clouds.

**Feedstock gas (feedgas)**: Dry natural gas used as raw material for LNG, petrochemical, and gas-to-liquids plants.

**FERC**: The Federal Energy Regulatory Commission (United States). FERC regulates interstate transmission of gas and electricity as well as aspects of LNG terminal siting.

**Flaring**: Burning off unwanted natural gas under controlled conditions.

**Force majeure**: French for “greater force”. Force majeure is a common clause in contracts that essentially releases one or both parties from
liability or obligation when an extraordinary event beyond the control of the parties, such as war, strike, riot, crime, act of God (e.g., flood, earthquake, or volcano), prevents one or both parties from wholly or partially performing their obligations under the contract.

**Free on board (FOB) contract:** An LNG sales and purchase agreement in which the buyer takes title to the LNG on loading at the liquefaction plant and is responsible for transporting it to the receiving terminal.

**Front-end engineering design (FEED):** The engineering phase that defines the design parameters of a project in sufficient detail to permit an accurate assessment of the project’s costs prior to the final investment decision and to provide the basis for the competitive bidding of an EPC contract.

**Gas reserves:** Gas deposits that geologists and petroleum engineers know or strongly believe can be recovered given today’s prices and drilling technology. The term “reserves” is distinct from the term “resources”, which includes all the deposits of gas that are still in the ground.

**Gas-to-liquids (GTL):** A process that converts natural gas into high-value liquid fuels similar to diesel, distillate or heating oil.

**Greenfield plant:** A brand-new facility built on a parcel of land which has not previously been used for that purpose.

**Heads of agreement (HoA):** A document outlining the main issues to be included in a subsequent contract or agreement (e.g., the sale and purchase of LNG). It serves as a guideline for both parties negotiating the final documents. HoAs may be binding or non-binding.

**Heating value (HV):** The amount of heat produced from the complete combustion of a unit quantity of fuel. The gross HV occurs when all the products of combustion are cooled to standard conditions and the latent heat of the water vapor formed is reclaimed. The net HV is the gross value minus the latent heat of the vaporization of the water.

**Henry Hub:** A point on the U.S. natural gas pipeline system in Erath, Louisiana. Henry Hub is owned by Sabine Pipe Line LLC and interconnects with nine interstate and four intrastate pipelines. It is the standard delivery point for NYMEX natural gas future contracts in the United States and is the point at which the benchmark natural gas price is set for the Gulf Coast.

**Hub:** A physical location where multiple pipelines interconnect and where buyers and sellers can make transactions.

**Hydrocarbon:** An organic chemical compound of hydrogen and carbon in gaseous, liquid, or solid phase.

**Interchangeability:** The ability to substitute one gaseous fuel for another in a combustion application without materially changing operational safety or performance and without materially increasing air pollutant emissions.
Liquefied natural gas (LNG): Natural gas, consisting mainly of methane (CH₄) that has been liquefied by cooling to −260°F (−161°C) at atmospheric pressure. LNG occupies approximately 1/600th of the space required for the vapor state at standard conditions.

Liquefied petroleum gases (LPG): Hydrocarbons that are gases at normal temperatures and pressures but readily turn into liquids under moderate pressure at normal temperatures, including propane, propylene, butane, isobutane, butylenes, or mixtures in any ratio.

LNG chain: The components of an LNG project that link the natural gas in the ground to the ultimate consumer. The main links are natural gas production and processing, liquefaction, shipping, regasification, and distribution.

LNG tanker: A tanker ship designed to transport LNG. An LNG tanker must have insulation and cryogenic facilities to keep LNG cool enough to stay in liquid form.

Manufactured gas: Gas produced from oil, coal, or coke.

Natural gas liquids (NGL): Liquid hydrocarbons extracted from natural gas in the field, typically ethane, propane, butane, pentane, and natural gasoline.

Natural gas processing: The treatment of field gas for use as pipeline-quality gas or as a feedstock for a liquefaction plant. Processing includes removing liquids, solids, vapors, and impurities.

Net back price: The price that the producer of natural gas receives at a defined point. The net back price is derived from the market price for the gas minus delivery charges to the market.

Nonassociated gas: Gas located in a reservoir that does not contain oil.

Off-peak: The period of a day, week, month, or year when demand is at its lowest.

Offshore LNG terminal: An LNG terminal that is located at an offshore location rather than on land.

Open access: A pipeline transportation or LNG terminaling service that is available to all shippers on a non-discriminatory basis, subject to capacity availability.

Peakshaving: The supplementing of the normal supply of gas during periods of peak demand with gas taken from LNG storage facilities, or produced from a mixture of propane and air. These facilities are usually located near load centers (market areas).

Peakshaving plant: A plant that liquefies gas from a pipeline during off-peak periods and stores it as LNG for future use, usually for local markets in cold climates.

Project financing: A common method of financing the construction of industrial infrastructure whereby the value of the plant and part or all
of its anticipated revenues are pledged as collateral to secure financing from lenders, who have limited or no rights to seek debt repayment (recourse) from the owners. Also known as non-recourse financing.

**Receiving terminal:** A large facility capable of receiving and storing the cargo from an LNG ship and vaporizing it for delivery to a pipeline system.

**Regasification:** Converting LNG back to its gaseous state by the application of heat. Also known as vaporization.

**Royalties:** A payment to an owner, often a government, for the right to produce oil and gas resources, usually calculated as a percentage of the revenues obtained at the point of production.

**Sale and purchase agreement (SPA):** A contract between a seller and a buyer for the sale and purchase of a certain quantity of natural gas or LNG for delivery during a specified period at a specified price.

**Sendout:** The volume of gas delivered by a plant or system in a specified period of time.

**Spot sales:** The sale of natural gas on a short-term basis.

**Stranded gas:** Gas that is not close to the market and requires significant infrastructure to deliver it to the market.

**Take or pay:** A commitment by the buyer of natural gas or LNG to pay for a minimum quantity in a defined period regardless of whether delivery is accepted.

**Time charter:** A contract for a specified period of time or a particular voyage, in which the shipowner provides the vessel and crew while the charterer supplies the cargo.

**Tolling rates:** Pricing that charges a customer a fixed rate per volume for use of a facility.

**Upstream:** Oil or gas operations that are closer to production.

**Vaporization:** See regasification.

**Weathering:** The change in LNG composition over time as a result of the preferential evaporation of nitrogen and methane in the boil-off of stored LNG.

**Wet gas:** Natural gas that produces a liquid condensate when it is brought to the surface.

*Source:* Adapted from Michael D. Tusiani and Gordon Shearer, LNG A NONTECHNICAL GUIDE, (PennWell 2007); Bob Shively, John Ferrare, and Belinda Petty, UNDERSTANDING TODAY’S GLOBAL LNG BUSINESS (Energy Dynamics Publications 2010).