

GAS SALES AND GAS  
TRANSPORTATION AGREEMENTS  
PRINCIPLES AND PRACTICE  
THIRD EDITION

PETER ROBERTS

SWEET & MAXWELL

**GAS SALES AND GAS  
TRANSPORTATION AGREEMENTS:  
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**THIRD EDITION**

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**SWEET & MAXWELL**



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## FOREWORD

Our energy world is currently facing a dual challenge. On the one hand there is an ever-increasing demand for secure supplies of energy as the global population grows, economies expand and individual prosperity increases. At the same time, mankind continues to struggle with the impact of growing energy usage on our climate. There is no silver bullet solution which can reconcile these conflicting aims. However, access to abundant and affordable supplies of natural gas offers the best chance of delivering energy security in a low-carbon economy going forward. There is always the hope that renewables and other decarbonised energy sources might be able to deliver the energy solutions the world requires but without game-changing innovation these technologies are marginal, expensive, inefficient without subsidy and relatively unreliable.

In the short to medium term natural gas will meet our energy needs, and over the longer term this could especially prove to be the case. The true extent of undeveloped gas resources, particularly unconventional gas, is the great unknown but the potential is enormous—some estimates of unconventional gas resources in-place worldwide are of over 1,000 trillion cubic metres (equivalent to more than 35,000 trillion cubic feet), which is nearly five times larger than the figure for global conventional gas reserves. This could prolong the present consumption rate of gas from 60 years to 250 years. Natural gas is a clean, affordable, reliable, efficient and secure energy source and is the responsible choice for achieving a sustainable energy future for ourselves and for our future generations. The development of unconventional gas resources worldwide, the emergence of numerous new LNG production and reception facilities and the rapid growth of the gas storage sector demonstrates how the versatility of gas has radically changed the industrial landscape for the global gas industry.

This, the third edition of this book, builds on the success of the previous two editions in systematically explaining the critical principles behind drafting and negotiating arrangements for the sale, transportation and storage of natural gas, in all its forms. This book gives legal and commercial practitioners an essential insight into the universe in which our natural gas industry operates. It is an indispensable guide to understanding and explaining the principles underlying the agreements which so many of us use on a day-to-day basis.

The International Gas Union is committed to promoting the continued technical and economic progress of the global gas industry, besides emphasising sustainable performance worldwide. I, as the current President of the International Gas Union, have the greatest pleasure in recommending this third edition of this book to the reader as part of that commitment.

**Datuk (Dr) Abdul Rahim Hashim**  
President, International Gas Union

## PREFACE

This is the third edition of this book. Apart from a general overhaul and update, in comparison with the second edition (2008) this edition includes specific consideration of the mechanics of gas storage and gives more attention to issues such as the rights of third party access to infrastructure and applicable competition law principles. The precedent agreements in Section II have not been radically changed (my experience of seeing them used in practice tells me that they work well enough as is) but some additional drafting has been suggested. A glossary of the various technical and operational terms used in this book has also been included.

Natural gas is increasingly viewed as the solution to the demand for a secure, reliable, long-term supply of clean energy and this is as much the case for emerging economies as it is for historical gas-producing economies whose domestic reserves bases are in decline. Concerns about climate change and energy security of supply have given renewed impetus to the development of gas (or LNG) production and consumption projects, and have propelled natural gas to the forefront of the energy agenda. Significant undeveloped reserves of unconventional and conventional gas mean that there is a plentiful supply of energy for future generations to rely on.

The appeal of natural gas as a feedstock for power generation, principally due to gas's advanced thermal efficiency and clean combustion characteristics (particularly when viewed in comparison with coal or oil as a feedstock) is well known. The attraction of gas is further enhanced when considering the comparative mechanics of developing power generation portfolios based on alternative energy sources. Nuclear energy programmes are expensive, are founded on lead-times often measured in generations and require significantly centralised efforts so that the necessary economies of scale can be achieved, whereas power generation through single or combined cycle gas turbines can be developed quickly in response to more localised market conditions. The tragic events which unfolded in Japan earlier this year have caused many nuclear energy-dependent countries to think again about placing such a heavy reliance on that technology. As for renewable energy (in all its various forms), its inherent intermittence, low load factoring and inability to sustain itself in the energy mix without the benefit of significant artificial economic engineering continues to give it a relatively marginal position.

The preface to the first edition of this book (2005) included a section headed "The Problem with Gas"; since then I have become convinced that the real problem is with most other sources of energy. Gas is the solution, not the problem.

The law in this book is current to May 31, 2011.

**Peter Roberts**  
**August 2011**

## GLOSSARY

<b>Abandoned mine methane (AMM)</b>	methane deposits resident in redundant coal-mining workings
<b>Acid gas</b>	see <b>sour gas</b>
<b>Ad hoc arbitration</b>	an arbitration of a project agreement conducted in accordance with whichever procedural rules the parties wish to apply (cf. <b>institutional arbitration</b> )
<b>Additional loss payee</b>	see <b>co-insured</b>
<b>Adjusted ACQ</b>	in an annually-based take or pay calculation, the annual contract quantity after the adjustments have been applied
<b>Adjustments</b>	in a take or pay calculation, a series of deductions which reflect the circumstances in which gas (or LNG) was not delivered to a buyer or was not taken delivery of by that buyer
<b>Administered arbitration</b>	see <b>institutional arbitration</b>
<b>Advanced reservation of capacity agreement (ARCA)</b>	see <b>capacities-based contract</b>
<b>Aggregator</b>	a buyer of gas (or LNG) principally for onward resale to end users rather than for its own consumption
<b>All events</b>	an obligation not capable of being relieved by force majeure (also called <b>hell-or-high-water</b> )
<b>Allocation</b>	a mathematical arrangement which provides for gas delivered in a commingled stream to be allocated back proportionately to each input source of that gas
<b>Allowed laytime</b>	a defined period of time for an LNG ship to load or unload (as appropriate), subject to certain extensions (cf. <b>used laytime</b> )
<b>Alternative delivery point</b>	a point specified in a GSA (or SPA) as an alternative delivery point to the primary delivery point
<b>Alternative dispute resolution</b>	a structured, mediation-based mechanism for the resolution of disputes in respect of a project agreement
<b>Amicable settlement</b>	informal dialogue between the senior management of parties to a dispute in order to promote settlement
<b>Analysis</b>	the determination of gas (or LNG) quality (cf. <b>metering</b> )

## GLOSSARY

<b>Annual contract quantity (ACQ)</b>	the maximum quantity of gas (or LNG) which a seller is obliged to deliver to a buyer in any contract year
<b>Annual deficiency</b>	in an annually-based take or pay calculation, the difference between a buyer's take or pay commitment and that buyer's actual offtake of gas (or LNG)
<b>Annual programme</b>	the annually-set programme for the delivery of LNG in respect of each contract year
<b>Annular capacity</b>	the total gas-carrying capacity of a gas pipeline
<b>Aquifer reservoir</b>	an underground geological formation for water storage which is capable of use as a gas storage facility
<b>Assignment</b>	a unilateral transfer of rights under a project agreement by a party
<b>Associated gas</b>	gas found in solution with associated liquids and produced only when those associated liquids are produced (also called <b>casinghead gas</b> and <b>solution gas</b> (cf. <b>non-associated gas</b> ))
<b>Associated liquids</b>	crude oil or condensate deposits found in solution with, and produced with, associated gas
<b>Atmospheric pressure</b>	a base reference point for pressure, used for the determination of gas (or LNG) units and for the measurement of gas (or LNG)
<b>Attributed order</b>	an order of priority for the delivery of gas (or LNG), reflective of how different contractual definitions of gas (or LNG) are deemed to have been delivered within a single physical volume
<b>Attribution</b>	an operational arrangement which provides for the borrowing and lending of gas between shippers in a multi-shipper pipeline (also called <b>substitution</b> )
<b>Bank gas</b>	see <b>make up</b>
<b>Bankability</b>	a determination of whether a gas (or LNG) project's development is capable of being debt financed by lenders
<b>Bareboat charter</b>	a charterparty where a ship is provided without crew for a charterer
<b>Base gas</b>	see <b>cushion gas</b>
<b>Base price</b>	in pricing gas (or LNG), the foundation component of an indexation mechanism
<b>Baseball arbitration</b>	see <b>pendulum arbitration</b>



## GLOSSARY

<b>Basic term</b>	the period of time in respect of a project agreement between the execution date and the termination date
<b>Beach 2000</b>	UK-specific contract terms used for the delivery of gas at the point of entry into the NTS
<b>Benefit sharing</b>	provision in an SPA whereby a seller and a buyer share the benefits achieved from a diversion
<b>Bilateral investment treaty (BIT)</b>	an agreement between two states regarding the protection of general investments
<b>Boil-off</b>	the natural vaporisation which occurs to any LNG cargo in ship (also called <b>weathering</b> )
<b>Bottle gas</b>	see <b>liquefied petroleum gas</b>
<b>Bottom stop</b>	see <b>floor</b>
<b>British thermal unit (Btu)</b>	the imperial unit of measure of calorific value
<b>Bundled price</b>	a single price for gas (or LNG) which contains variously commodity, transportation and/or processing costs
<b>Bunkers</b>	the fuel required for the operation of an LNG ship
<b>Buyback</b>	a gas transportation formulation whereby a transporter buys a defined volume of gas from a shipper at a defined point and sells an equivalent volume of gas back to that shipper at another defined point
<b>Buyer's downward flexibility quantity (BDFQ)</b>	the right of a buyer to request a decrease in the ACQ
<b>Buyer's nomination regime</b>	a gas sales arrangement whereby a buyer nominates the quantities of gas for delivery (cf. <b>seller's nomination regime</b> )
<b>Buyer's upward flexibility quantity (BUFQ)</b>	the right of a buyer to request an increase in the ACQ
<b>Calorific value</b>	the defined measure of heat output from the combustion of a given volume of gas (also called <b>thermal value</b> or <b>energy content</b> )
<b>Capacities-based contract</b>	a GTA founded on the principle of the reservation by a transporter, on a shipper's behalf, of a defined volume of capacity in a gas pipeline (also called an <b>advanced reservation of capacity agreement</b> (or <b>ARCA</b> ) (cf. <b>quantities-based contract</b> ))
<b>Capacity payment</b>	the fee payable by a shipper to a transporter in a capacities-based contract for capacity reserved in a gas pipeline by that transporter on that shipper's behalf

## GLOSSARY

<b>Captive insurance</b>	an insurance company affiliated to a party to a project agreement which provides insurance cover in respect of project risks
<b>Carry forward</b>	any quantity of gas (or LNG) taken delivery of by a buyer in excess of the take or pay quantity for a period which will count as an adjustment to the following period's take or pay quantity
<b>Cash-out</b>	recovery by a buyer of an accrued shortfall price discount balance or make up balance through a cash payment by a seller (cf. <b>gas-out</b> )
<b>Casinghead gas</b>	see <b>associated gas</b>
<b>Ceiling</b>	a defined point which a price or tariff cannot escalate beyond (also called a <b>top stop</b> (cf. <b>floor</b> ))
<b>Change of control</b>	any change in the superior ownership of a party which triggers protective rights in favour of a counterparty in a project agreement
<b>Charterparty</b>	a contract for the hire of a ship, entered into between a shipowner and a charterer (as the hirer of the ship)
<b>Check metering</b>	measurement equipment which is relied upon to give corroborative readings of gas (or LNG) quality and quantity (cf. <b>fiscal metering</b> )
<b>Circular liability</b>	a liability allocation regime in a project agreement whereby a series of inter-party indemnities are applied to ensure the proper operation of a mutual hold harmless regime
<b>Coal bed methane (CBM)</b>	methane deposits which are adsorbed onto the surface of unmined coal deposits (also called <b>coal seam gas</b> )
<b>Coal seam gas (CSG)</b>	see <b>coal bed methane</b>
<b>Co-insured</b>	a person named as an additional beneficiary to a policy of insurance, despite not being the principally insured person
<b>Collateral support</b>	financial or other support given by a third party as security for a party's performance of its obligations under a project agreement
<b>Commingling</b>	a mixture of gas from more than one input source within a gas pipeline
<b>Commissioning</b>	the process of testing new facilities prior to their becoming fully operational
<b>Commissioning gas/LNG</b>	gas (or LNG) used for the commissioning of gas (or LNG) facilities

<b>Commissioning period</b>	the period defined in a project agreement during which commissioning will take place (also called a <b>run-in period</b> or a <b>test period</b> )
<b>Common carrier pipeline</b>	see <b>multi-shipper pipeline</b>
<b>Common stream</b>	an agreement for the common administration of multiple project agreements (also called a <b>whole stream</b> )
<b>Composition</b>	the chemical composition of a quantity of gas (or LNG)
<b>Compressed natural gas (CNG)</b>	pressurised methane which is principally used as a vehicle fuel
<b>Condensate</b>	the heavier (pentane to octane) hydrocarbon fractions which exist as a liquid at ordinary atmospheric temperature and pressure (but typically exist as a gas in sub-surface conditions) (also called <b>light liquid hydrocarbon</b> )
<b>Condition precedent</b>	a condition in a project agreement which, until fulfilled or waived, precludes the full effectiveness of that agreement
<b>Conditions of use (COU)</b>	arrangements between a portowner and a shipowner which govern the transit of LNG ships through a loading port or an unloading port
<b>Confirmation</b>	a transaction-specific record of the key commercial terms for the sale of gas (or LNG), made ancillary to a master sales agreement
<b>Construction and tie-in agreement (CTIA)</b>	an agreement intended to regulate the performance of tie-in works and the allocation of liabilities between the relevant parties
<b>Contract quantity (CQ)</b>	the maximum quantity of gas (or LNG) to be sold under an agreement
<b>Contract time</b>	the measure of time which is agreed between the parties to apply to the chronology of a particular agreement
<b>Cost plus pricing</b>	the additive construction of a price for gas (or LNG) generated by working upwards from a seller's revenue requirements as a starting point (cf. <b>netback pricing</b> )
<b>Cover standard damages</b>	damages payable by a seller to a buyer in respect of a shortfall, intended to cover the incremental cost to the buyer of procuring replacement gas (or LNG) quantities
<b>Cubic metre (m<sup>3</sup>)</b>	the metric unit of measure of gas volume (cf. <b>standard cubic foot</b> )

## GLOSSARY

<b>Cushion gas</b>	the volume of gas required in a gas storage facility as a permanent inventory, to provide an essential operational buffer between the structure of the facility and the working gas (also called <b>base gas</b> )
<b>Custody</b>	the physical possession of a particular quantity of gas (or LNG)
<b>Cycling</b>	the cycle of redelivering the total volume of working gas from a gas storage facility and injection of a replacement volume (and <b>cycle rate</b> is the number of times a gas storage facility's working gas volume can be cycled during a specific time period) (also called <b>turnover</b> )
<b>Daily contract quantity (DCQ)</b>	the quantity of gas which a seller will deliver to a buyer on any day
<b>Decline pattern</b>	the profile for the delivery of gas (or LNG) which is set during a decline period
<b>Decline period</b>	a reducing profile for gas (or LNG) production, found typically in a depletion contract
<b>Dedication contract</b>	see <b>depletion contract</b>
<b>Deductible</b>	see <b>excess</b>
<b>Deemed delivered amount</b>	payment by a buyer for a cargo of LNG which that buyer has not taken delivery of
<b>Deemed nomination</b>	a nomination implied on a buyer's behalf where that buyer has omitted to make an actual nomination
<b>Default interest</b>	interest payable on a late payment under a project agreement at a defined rate of interest
<b>Deliver or pay</b>	an option for a seller not to deliver gas (or LNG) in response to a buyer's requirements, in consideration of the payment of defined compensation by that seller
<b>Deliverability</b>	a measure of the volume of gas which can be redelivered from a gas storage facility during a specific time period (and <b>deliverability rate</b> is the rate at which that deliverability can be completed)
<b>Delivered ex ship (DES)</b>	an Incoterms formulation used in LNG deliveries whereby delivery takes place at the unloading port and the seller bears the transportation obligation
<b>Delivered sale</b>	a sale of gas where the delivery point is the point of connection between a buyer's facilities and a gas pipeline (cf. <b>plant gate sale</b> )
<b>Delivery capacity</b>	the obligation of a seller to maintain gas (or LNG) productive capacity to meet its gas (or LNG) delivery obligations

## GLOSSARY

<b>Delivery period</b>	the period of time in respect of a project agreement between the start date and the termination date
<b>Delivery point</b>	(1) the point in a gas (or LNG) sales arrangement at which title to gas (or LNG) transfers from a seller to a buyer (also called the <b>sales point</b> ); (2) the point on a gas pipeline at which a transporter will deliver custody of gas back to a shipper (also called the <b>redelivery point</b> )
<b>Delivery pressure</b>	a specification for the operating pressure at which gas is to be delivered (by a seller to a buyer at the delivery point or into a gas pipeline by a shipper or from a gas pipeline by a transporter)
<b>Delivery tolerance</b>	the right of a seller to over-deliver gas against a buyer's requirements, up to a certain level, which that buyer will still be obliged to pay for
<b>Demurrage</b>	in the context of LNG shipping, compensation due from a non-transporting party to a transporting party where used laytime exceeds allowed laytime
<b>Depleted gas reservoir</b>	a depleted onshore or offshore gas reservoir capable of use as a gas storage facility
<b>Depletion contract</b>	an agreement for the sale of gas (or LNG) which is characterised by the dedication of a nominated source of supply to a buyer (also called a <b>dedication contract</b> (cf. <b>supply contract</b> ))
<b>De-risking</b>	the process by which a party's risk profile under a project agreement is modified in exchange for a financial incentive from the counterparty
<b>Destination clause</b>	provision of an SPA whereby a buyer is prohibited from selling its LNG outside of the originally intended country of delivery
<b>Dewpoint</b>	the point of temperature at which a gas will cool sufficiently to condense to a liquid
<b>Direct agreement</b>	see <b>step-in agreement</b>
<b>Distribution pipeline</b>	a pipeline used to transport gas from gas reception facilities or LNG regasification facilities to end user facilities (also called a <b>takeaway pipeline</b> )
<b>Diversification</b>	the redirection of an LNG cargo from the unloading port to which it was originally destined
<b>Downstream</b>	gas (or LNG) reception, processing, consumption and related transportation
<b>Dry gas</b>	gas consisting principally of methane and ethane (cf. <b>wet gas</b> )

## GLOSSARY

<b>Duration</b>	a measure of the time taken to redeliver the total volume of working gas from a gas storage facility
<b>Economic termination</b>	the right of a party to terminate its participation in a project agreement on the grounds that the agreement is no longer economically sustainable for that party
<b>EFET</b>	the European Federation of Energy Traders, which has issued a model form master agreement used for non-physical gas trading
<b>Effective date</b>	the date on which a project agreement becomes fully effective between the parties (which could be later than the execution date)
<b>Effective pricing</b>	the real level at which gas (or LNG) is priced (cf. <b>nameplate pricing</b> )
<b>Energy content</b>	see <b>calorific value</b>
<b>End user</b>	a secondary buyer of gas, regas or LNG from a principal buyer
<b>End user agreement (EUA)</b>	an agreement between a buyer and an end user for the on-sale of gas, regas or LNG
<b>Equity pipeline</b>	a gas pipeline which is owned and/or operated by a person principally for the transportation of that person's own gas
<b>Equity storage</b>	a gas storage facility wherein a facility owner reserves all of the capacity to meet its own commercial needs (cf. <b>storage service</b> )
<b>Evacuation</b>	the transportation of gas from the site of its production to the point where the commercial value of the gas is realised
<b>Evergreen</b>	a project agreement (or a contractual entitlement) which comes into force and thereafter subsists (without a defined end-date) unless and until terminated by either party
<b>Exceptions</b>	allocations of liability between a shipowner and a charterer under a charterparty
<b>Excess</b>	a monetary component in a policy of insurance which will be met by the insured, rather than the insurer (also called a <b>deductible</b> )
<b>Excess gas (excess LNG)</b>	gas (or LNG) which is supplied by a seller to a buyer, at the buyer's request, in excess of any agreed volume and/or operational constraints
<b>Execution date</b>	the date on which a project agreement is signed between the parties (but not necessarily the date on which that agreement becomes fully effective between those parties)

## GLOSSARY

<b>Expert reference</b>	a method of resolving disputes in a project agreement through reference by the parties to an independent but jointly agreed expert (or panel of experts)
<b>Extension period</b>	any period by which a project agreement's basic term is extended beyond the envisaged termination date by agreement between the parties
<b>Extrinsic value</b>	the valuation of a gas storage facility based on deliverability rates and short-term gas demand/price volatility
<b>Facilities obligation</b>	provision in a project agreement relating to the installation, operation and maintenance of defined facilities
<b>Financing transfer</b>	a transfer by a party of its interests in a project agreement to lenders as security
<b>Firm rights</b>	a committed obligation to deliver gas for sale or by transportation (cf. <b>interruptible</b> )
<b>Fiscal metering</b>	measurement equipment which is relied upon as the primary determinant of gas (or LNG) quality and quantity (cf. <b>check metering</b> )
<b>Fixed pipeline stock</b>	see <b>linefill</b>
<b>Flat gas</b>	a commitment to deliver a defined quantity of gas (or LNG) for a defined period and at a defined price
<b>Flexible gas</b>	the ability of a gas market participant to access additional gas reserves when market conditions make it attractive to do so
<b>Floor</b>	a defined point which a price or tariff cannot go below (also called a <b>bottom stop</b> (cf. <b>ceiling</b> ))
<b>Flow control</b>	the ability of a party to control the flow of gas through a pipeline
<b>Flowline</b>	see <b>in-field pipeline</b>
<b>Force majeure</b>	a contractual device whereby a party is relieved from liability for breach of a project agreement which would otherwise apply where the breach has been caused by an event beyond the control of the affected party
<b>Force majeure restoration quantity (FMRQ)</b>	the commitment of a seller to deliver, or a buyer to take delivery of, gas (or LNG) which was not delivered, or taken delivery of, because of a force majeure event

## GLOSSARY

<b>Forecast</b>	predictions of a buyer's requirements for gas (or LNG) deliveries or a seller's ability to deliver gas (or LNG)
<b>Forward delivery</b>	traded gas (or LNG) which is intended for delivery in a month later than the month in which the trade is made
<b>Founding fathers' rights</b>	a rule of priority which applies in the curtailment of gas pipeline capacity to give priority to certain shippers
<b>Free on board (FOB)</b>	an Incoterms formulation used in LNG deliveries whereby delivery takes place at the loading port and the buyer bears the transportation obligation
<b>Front month</b>	the first months of a three-month period contained within a specific lifting schedule
<b>Frustration</b>	a common law doctrine which relieves the parties from an obligation to perform a project agreement where supervening circumstances render such performance impossible
<b>Fuel gas</b>	gas used by a transporter as fuel for various platform operation, gas processing and gas transportation functions
<b>Full cargo lot</b>	the LNG carrying the capacity of a particular LNG ship
<b>Funnel</b>	see <b>window</b>
<b>Gas chromatograph</b>	a device used to analyse the chemical composition of gas (or LNG)
<b>Gas Laws</b>	a series of theoretical laws which together illustrate the behavioural inter-dependencies of volume, pressure and temperature in an ideal gas
<b>Gas-out</b>	recovery by a buyer of an accrued shortfall price discount balance or make up balance through provision by a seller of gas (or LNG) or other hydrocarbon fractions (cf. <b>cash-out</b> )
<b>Gas sales agreement (GSA)</b>	any agreement for the sale and purchase of gas
<b>Gas storage</b>	the business of injecting, storing and redelivering gas according to market demands (also called <b>inventory gas</b> )
<b>Gas transportation agreement (GTA)</b>	any agreement for the transportation of gas by gas pipeline
<b>Gathering line</b>	see <b>in-field pipeline</b>
<b>Good faith nomination</b>	a limitation on the range of a buyer's nomination where a seller has declared operational problems (also called an <b>honourable nomination</b> )



## GLOSSARY

<b>Grab sampling</b>	gas chromatography which is operated on an intermittent basis
<b>Gross calorific value</b>	the determination of calorific value which takes account of latent heat produced during combustion by water vapour (also called <b>higher heating value</b> (cf. <b>net calorific value</b> ))
<b>Gross negligence</b>	see <b>wilful misconduct</b>
<b>Guilty party pays</b>	a liability allocation regime in a project agreement whereby a person assumes responsibility for loss of or damage to any property and personnel interests which that person caused (cf. <b>mutual hold harmless</b> )
<b>Hardship</b>	a right of a party to call for a revision to a gas (or LNG) price because a defined hardship event has occurred
<b>Heel</b>	a minimum quantity of LNG retained in an LNG ship after unloading for temperature stabilisation on the ballast voyage
<b>Hell-or-high-water</b>	see <b>all events</b>
<b>Henry Hub</b>	a physical meeting point of various gas pipelines in Louisiana (USA) from which collated trading data is used as a price-setter for North American gas markets
<b>Higher heating value</b>	see <b>gross calorific value</b>
<b>Hire</b>	the amounts payable by a charterer to a shipowner for the hire of an LNG ship under a charterparty
<b>Honourable nomination</b>	see <b>good faith nomination</b>
<b>Host government agreement (HGA)</b>	an agreement between an investor and a host state regarding the protection of a particular investment project
<b>Hydrates</b>	methane deposits trapped within ice-like crystalline water structures
<b>Hydrocarbon</b>	crude oil, natural gas and associated liquids deposits (also called <b>petroleum</b> )
<b>Ideal gas</b>	a hypothetical gas which demonstrates the application of the Gas Laws (cf. <b>real gas</b> )
<b>Incoterms</b>	a series of standard international sales terms published by the International Chamber of Commerce (ICC), most recently issued in January 2011
<b>Incremental capacity</b>	see <b>ullage</b>