

Industries  
Energy, Utilities & Mining

# Glossary

Glossary of terms used in the trading of oil and gas,  
utilities and mining commodities



The Energy, utilities and mining practice of PricewaterhouseCoopers has compiled this glossary of oil and gas, utilities and mining commodity trading and risk management terms. The objective of this glossary is to provide our clients with a useful reference guide to the language of commodity trading and risk management.

Additionally, this glossary may be a valuable resource for educating key stakeholders within the oil and gas, utilities and mining industries, including employees, customers, shareholders and others.

# Introduction

Trading of oil and gas, utilities and mining commodities has moved from being a contract-focused specialist activity to occupy a more centre stage role in the strategies of companies in these sectors. Energy market liberalisation, carbon markets, increased participation from investment banks and hedge funds, and greater interplay between physical, future, over the counter and exchange traders markets, have all added to the scope and complexity of commodities trading and risk management.

This growth and dynamism brings with it a growing and changing language. Cross-commodity trading is also a new reality – from oil, gas, LNG, CO<sub>2</sub> allowances, to coal, basic and precious metals and uranium – requiring familiarity with trading terminology among a wider range of professionals. Our glossary provides a comprehensive guide to the many expressions used.

Like any guide to language it is, at times, intriguing and fascinating. An outsider coming across terms such as ‘butterfly spread’ and ‘contango’ might be forgiven for mistaking the world of energy trading for a summer meadow or an exotic dance. On the other hand, terms such as ‘crack spread’, ‘slamming’ and ‘brown out’ are likely to bring them firmly back down to earth.

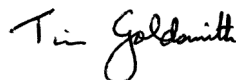
This glossary will be of use to a broad audience – CEOs, CFOs, members of the management and supervisory boards, accountants, traders, regulators, tax consultants and many more – bringing together terms from the worlds of finance, electricity, mining, oil and gas as well as sectors such as law, regulatory affairs, economics and even meteorology.



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**Abandonment**

Permission given to US interstate pipelines by the Federal Regulatory Energy Commission (FERC) allowing for the discontinuation of sales, storage, or transportation service along any portion of the pipeline system. FERC permission is sought when utility companies want to replace, update or sell their facilities.

**Above-market cost**

- When the cost charged for a given commodity is higher than the going rate for that commodity in the open market, the difference between the actual price paid and the open market rate is referred to as the above-market cost.
- The term refers to the amount over and above the market rate, not the whole cost.

**Access charge, wires charge**

- A fee charged for the right to send or receive power over another party's distribution system. This fee, which is usually levied on a producer, supplier, or customer, serves as a type of rental or user fee charged for the use of the energy transmission infrastructure used to transmit energy to the customer.
- In regulated markets, access charges may be bundled into charges for energy used by the customer.
- In deregulated markets, access charges usually appears as a separate line item on energy invoices.
- Wires charges are usually billed at a cents-per-kilowatt-hour rate, which is typically set by regional legislatures. (Note: This situation is likely to change as the energy transmission infrastructure becomes more heavily privatised.)
- The fees collected from access charges are used to defray costs for infrastructure (power lines, distribution stations, maintenance, etc) as well as less obvious costs such as stranded costs, securitised debt, taxes, franchise fees, development costs for renewable energy and environmental programs, public benefits programs (eg, education/public relations, support for low-income consumers) and a range of others.

**Accessible reserve base**

- The portion of the demonstrated reserve base estimated by EIA to be accessible, determined by application of one or more accessibility factors within an area.
- May be referred to as accessible resources because it is a subset of accessible resources and is usually part of a single resource study.

**Accrual accounting**

- When swaps are used to hedge specific on-balance-sheet exposures, they are often accounted for on an accrual basis.
- Under the accrual method, the net payment or receipt in each period is accrued and recorded as an adjustment to income or expense.

**Actual imbalance**

A value representing the difference between the amount of energy use actually recorded by meters and the load (customer demand) assigned to the party or parties being metered.

Used to determine gross costs for energy used over and above the assigned load, or to determine possible discounts or demand-side management strategies to deal with declining use of a customer's assigned load.

**Affiliate**

When one company is owned or controlled by another company, or shares the same owner or controller as another company, that company is referred to as an 'affiliate'.

**Aggregation, load aggregation**

- The act of creating or managing a large group or block (aggregate) of consumers who join together to leverage their combined purchasing power when soliciting bids from energy suppliers or negotiating rates for services. The term can apply either to groups of private individuals or to commercial and institutional groups. Aggregation usually decreases the costs involved in dealing with energy suppliers, but it does not necessarily result in lower costs for the energy itself.
- The process of estimating the total demand and scheduling requirements for energy supplied to a group or block of customers.

**Air quality standards**

The prescribed level of pollutants allowed in outside or indoor air as established by legislation.

**All-requirements contract**

An agreement between an energy producer or supplier and a utility in which the utility requires all of its energy from a single source. In return for the right to exclusively supply the utility, the producer or marketer typically agrees to tie any changes to the price charged for the energy to the cost of producing it.

**Alternative Delivery Procedure (ADP)**

A provision of a futures contract that allows buyers and sellers to make and take delivery under terms or conditions that differ from those prescribed in the contract. An ADP may occur at any time during the delivery period, once long and short futures positions have been matched for the purpose of delivery.

**American-style option**

An American-style option may be exercised at any time during its lifetime, up to and including the expiry date.

**Ancillary services**

- A collection of secondary services offered to help ensure the reliability and availability of energy to consumers. It generally refers to any service related to provision (but not generation) of energy other than the use of transmission facilities. These services are typically offered by energy utilities and support companies and sold to wholesalers, producers and consumers. These services may include supplementary energy generation during peak demand periods, demand-side management (DSM), maintenance of replacement reserves, management of control systems that maintain steady system voltage, and a host of others.
- Services needed to shift a large-scale customer (eg, a municipality or industrial consumer) from one energy supplier to another when the need arises, and they are usually (but not always) required as part of any well-rounded energy package negotiated with a large-scale consumer. Some types of ancillary services may be required by regional or national regulations when providing service for certain types of customers.
- Service necessary to support the transmission of energy from resources to loads while maintaining reliable operation of the Transmission Provider's transmission system in accordance with Good Utility Practice.

**Annual Contract Quantity (ACQ)**

The amount of gas specified in a buyer's nomination purchase contract for one year. Some rights, such as make-up gas and take-or-pay, may need to be taken into account, depending on the amount of gas taken versus the amount contracted for.

### Annual effects

The total effects in energy use (measured in megawatt hours) and peak load (measured in kilowatts) caused by all participants in the DSM programs that are in effect during a given year. It includes new and existing participants in existing programs (those implemented in prior years that are in place during the given year) and all participants in new programs (those implemented during the given year). The effects of new participants in existing programs and all participants in new programs should be based on their start-up dates (ie, if participants enter a program in July, only the effects from July to December should be reported). If start-up dates are unknown and cannot be reasonably estimated, the effects can be annualised (ie, assume the participants were initiated into the program on January 1 of the given year). The Annual Effects should consider the useful life of efficiency measures, by accounting for building demolition, equipment degradation and attrition.

### Applicable rate

- Term used in billing and tariff schedules.
- A predefined or agreed-upon standard rate for a given resource or service. The applicable rate is the rate which can or will be applied to that resource or service.

### Arbitrage

A method of trading a security or commodity in which the trader attempts to profit from differences in price between two or more markets. The usual objective of arbitrage is to acquire a commodity on one market and sell it on another at a higher price.

### Arrearage

- Money owed on overdue bills.
- The quantity of money represented by bills that are unpaid beyond their due dates (in arrears) is referred to in the energy industry as arrearage.

**Assignment**

The action by which the seller of an option is notified of a buyer's intention to exercise the rights associated with the option.

**Asian option, Average option**

Options that have payoffs that depend on an average of prices for the underlying commodity over a period of time, rather than the price of the commodity on a single date. The averaging period may correspond to the entire life of the option, or may be shorter.

**Asked price, bid price, selling price, offer price, purchase price**

- Prices offered and expected in a given market such as a commodities market in which buyer and seller can negotiate a price.
- Asked price is usually considered to be the average of all prices asked by parties offering to sell at a given time, also referred to as the selling price or offer price.
- Bid price is the average of all prices asked by buyers at a given time, also referred to as purchase price. Since bidders don't buy unless the price is agreeable, purchase price has become synonymous with actual price paid.

**Asset**

An economic resource, tangible or intangible, which is expected to provide benefits to a business.

**Assured system capacity**

- The capacity of a system that is assured to be functional at a given moment.
- The capacity of a production or transmission system to provide energy not including reserve capacity, emergency capacity, or capacity that has already been committed to parties in neighboring systems.

**At-the-market**

Also called a market order. An order to buy or sell a futures contract at any price is obtainable when the order reaches the trading floor.

**At-the money**

- At-the-money spot – An option whose strike is the same as the prevailing market price of the underlying rate or price.
- At-the-money forward – An option whose strike is at the same level as the prevailing market price of the underlying forward contract.



### Available but not needed capability

Net capability of main generating units, that are operable but not considered necessary to carry load, and cannot be connected to load within 30 minutes.

### Average cost

- A crude method of determining the gross cost of providing energy service.
- Calculated by dividing the total cost of provision, including all costs for facilities, labour, fuel, etc, by the amount of energy provided. The result is the average per-unit energy cost. This value is typically used for benchmarking costs for a group of consumers or for a utility as a whole. If average cost was used for setting prices, it could unfairly penalise customers with system-friendly usage patterns and pass undeserved savings on to customers who may be stressing the system and raising total provision costs.

### Average daily production

The ratio of the total production at a mining operation to the total number of production days worked at the operation.

### Avoided cost, short-run avoided cost, long-run avoided cost

- The marginal cost for the same amount of energy acquired through another means such as construction of a new production facility or purchase from an alternate supplier. For example, a megawatt-hour's avoided cost is the relative amount it would cost a customer to acquire this energy through the development of a new generating facility or acquisition of a new supplier.
- **Avoided cost** is typically used to calculate a fair price for energy produced by co-generators and other energy producers that meet the specifications of the Public Utility Regulatory Policies Act of 1978. The use of avoided cost rates for co-generated energy is intended to prevent waste and improve both efficiency and cleanliness by insuring that fair market prices are paid for energy generated from renewable resources, small producers and others.
- **Short-run avoided cost:** Short-run avoided cost refers to avoided cost calculated based on energy acquisition costs plus ongoing expenses.
- **Long-run avoided cost:** Long-run avoided cost factors in necessary long-term costs including capital expenditures for facilities and infrastructure upgrades.

**Back month contracts**

Any exchange-traded derivatives contracts apart from the nearest, or front, contract month.

**Back office**

Department responsible for the financial handling of trading operations.

**Backwardation**

When the price of nearer (typically prompt or spot) crude underlying commodity or instrument trades at a premium to the same commodity or instrument traded further forward. Commonly referred to as an inverse market

**Back-to-back loan**

An inter-company loan, which is channelled through a bank.

**Balancing, load balancing, balancing energy supply**

- Balancing, or load balancing, is a requirement made of transmission systems that the energy sent or requested from energy producers or other suppliers be equal to the amount of energy delivered to customers.
- Balancing energy supply is the quantity of the total reserve energy available to be added into the system over and above any energy scheduled for use at a given time. It is a combination of all reserves ready to be pressed into use whenever an imbalance occurs between system load and customer demand. These reserves can include spinning and non-spinning reserves, replacement reserve, regulation, and any other energy from generators that can respond to a short-notice request for more energy.

**Banker's acceptance**

A draft or bill of exchange accepted by a bank that guarantees the payment.

**Banking**

Where excess gas that one shipper cannot use is lent to another shipper to be returned at a later date.

**Barge**

Motored or motorless vessel used to carry oil products, often along a river. Barges vary in capacity, mainly from 1,000 to 5,000 tons.

**Barrel**

- A unit of measurement most commonly used for crude oil.
- A barrel of crude oil is equal to approximately 42 US gallons or 159 litres (Note: The actual measurement depends on the fluid being measured).

**Base bill**

A charge calculated through multiplication of the rate from the appropriate electric rate schedule by the level of consumption.

**Base rate**

- Non-industry-specific term referring to a fixed rate for a service or commodity. Depending on the context, it can mean a fixed rate to which other charges may be added or discounts applied, or a rate that remains fixed and unchangeable until the parties responsible for setting the rate choose to change it.
- Base rates are often set for energy by regulatory authorities in regions served by public utilities as a means of enforcing efficiency on the utility and assuring the public of a stable energy price – although, additional amounts can be added in some circumstances. A base rate could remain fixed for as long as a year, or could change with each billing period depending on how a given region structures its rates.

**Baseline forecast**

A prediction of future energy needs that does not take into account the likely effects of new conservation programs that will start in the future.

**Baseload**

The minimum amount of electric power delivered or required over a given period of time at a steady rate.

**Baseload capacity**

The generating equipment normally operated to serve loads on an around-the-clock basis.

**Baseload supply**

The actual available power used to meet minimum expected customer requirements at a given time (baseload demand). Price structures for baseload supply tend to run in the opposite direction of prices for peak supply. Baseload supply tends to be steady and relatively cheap, although the fixed costs are normally much higher than peak supply prices. Peak supplies tend to be costly, but fixed costs are relatively low since the facilities used to generate peak supplies don't have to be in steady operation.

**Baseload unit**

- An energy generating facility whose sole or primary purpose is to meet baseload demand, or provide minimum power requirements for customers.
- Baseload units are typically the most reliable and highest output generating facilities within a given group of generating units, and should, at least in theory, produce energy at the lowest cost.

**Basis**

- Basis is a financial term that refers to the accepted value of a service or commodity at a given moment, or the value at which something can be purchased at a given time. The basis value for a dollar, for example, is always a dollar.
- Basis is most commonly used as a yardstick for measuring differences in price. If the accepted price of a given commodity is US\$100, then a price of US\$105 for the same commodity is five percent higher than basis.

**Basis point**

One hundredth of a percent, or one ten thousandth of the total, usually used as a unit of measurement relative to another measurement, normally a measurement whose value changes over time.

**Basis risk**

The risk that the value of a futures contract (or an over-the-counter hedge) will not move in line with that of the underlying exposure.

The risk that the cash-futures spread will widen or narrow between the times at which a hedge position is implemented and liquidated.

There are various types of basis risk:

- **Locational:** (eg,) A heating oil wholesaler that sells its product in Baltimore will be exposed to basis risk if it hedges using New York Harbor heating oil futures contracts listed by NYMEX.
- **Product:** Mismatches in type or quality of hedge and underlying (eg, hedging jet fuel with heating oil);
- **Time or 'calendar':** (eg,) hedging an exposure to physical prices in December with a January futures contract.

**Basis swap**

- The exchange of one type of rate index for another. For example, if the expected price of coal is referenced to the price at one location, exchanging that price for the price at another location constitutes a basis swap.
- A basis swap can also involve swapping the base currency, such as swapping the base price of a commodity in US dollars for the base price in Japanese yen.
- Basis swapping is used in the energy industry as a technique for managing price fluctuations, most commonly fuel prices, which may vary from market to market or country to country.

**Basis trading**

To deal simultaneously in a derivative contract, normally a future, and the underlying asset. The purpose is either to cover derivatives sold, or to attempt an arbitrage strategy. This arbitrage can either take advantage of an existing mis-pricing (in cash-and-carry arbitrage) or be based on speculation that the basis risk will change.

**Basket swap**

A swap in which the floating leg is based on the returns on a basket of underlying commodities.

**Bbl**

The abbreviation for barrel.

**Bear spread**

An option spread trade that reflects a bearish view on the market, usually the purchase of a put spread.

**Benchmark crude**

- Synonymous with reference crude or marker crude.
- A crude oil whose price is used as a reference against which other crudes are priced.
- Because of their liquidity, the New York Mercantile Exchange light sweet crude oil and IPE Brent crude oil futures contracts are used as global benchmarks. Dubai crude is widely used as a benchmark for Middle Eastern crudes, especially for sale to Asian markets.

**Benefits charge**

The addition of a per-unit-tax on sales of electricity. It generates a revenue that is used for or to encourage investments in energy efficiency measures and/or renewable energy projects.

**Beta**

The extent to which that rate or price follows movements in the overall market. If the beta is greater than one, it is more volatile than the market; if the beta is less than one, it is less volatile.

**Bid/Ask**

A measure of market liquidity, also known as bid/offer.

The bid is the price level at which buyers are willing to buy and the ask is the price level at which sellers are willing to sell. The thinner the spread the higher the liquidity.

**Bilateral netting**

An agreement between two counterparties to offset the value of all in-the-money contracts with all out-of-the-money contracts, resulting in a single net exposure amount that one counterparty owes to the other.

**Billing demand, ratcheted demand charge**

A charge applied to an energy customer for energy reserved or made available explicitly for that customer. This charge is levied whether or not the customer actually uses the energy made available for them. Such a charge might be applied to an industrial customer who may have inconsistent supplies of raw materials, but who must have access to substantial amounts of energy when those materials are available, or to a seasonal customer who requires large amounts of energy at one time of the year for which a utility company must make extra facilities available year-round.

**Binomial model**

- Any model that incorporates a binomial tree, also called a binomial lattice.
- Describes the evolution of a random variable over a series of time steps, assigning given probabilities to a rise or fall in the variable. After the initial rise or fall, the next two branches will each have two possible outcomes and so the process will continue, building a 'tree' over time. The process is usually specified such that an upward movement followed by a downward movement results in the same price, so that the branches recombine. Binomial trees are of interest because they can be used to deal with American-style features: the early exercise condition can be tested at each point in the tree.

**Blackout, brownout, brown power, rolling blackout**

- **Blackout:** A blackout is a complete interruption of power in a given service area. Rolling blackouts are controlled and usually preplanned interruptions of service. A brownout is a partial, temporary reduction in system voltage or total system capacity.
- **Rolling blackouts:** Rolling blackouts typically occur with at least some advance warning, normally last for a fixed length of time, and are deliberately produced by utility companies. They can be used as a means of coping with peak power demands that cannot be met from existing supply. Rolling blackouts are usually intended to affect only a specific service area, and the energy provider will typically spread these blackouts among several service areas to ensure that no specific area suffers substantially more than any other. Planned outages and rolling blackouts differ slightly in that planned outages are usually announced well in advance and are most commonly needed to allow for routine maintenance, while rolling blackouts can occur with relatively little warning and are intended to take stress off of the system's energy load.
- **Brownouts:** In most cases, brownouts are deliberately produced by energy providers as an emergency measure to prevent the system from failing completely (blacking out). Typically a utility will decrease system voltage by 10-25%, usually for a short period of time. This reduction typically has minimal effect on heat and lighting systems, most of which can function reliably for short periods on suboptimal voltage, but sensitive electronic equipment requiring reasonably precise voltages may not be able to function, and long-term brownouts can cause premature wear in non-electronic devices. Computer disk drives often suffer write failures when supplied with suboptimal voltage, and electric motors tend to run hotter when required to produce the same horsepower during a brownout. Normal fluctuations in voltage do not qualify as brownouts. System voltage in many service areas can vary by as much as five percent above or below 'nominal' line voltage. Manufacturers of electrical and electronic products know this. Most North American consumer and commercial products are designed to function normally and safely for long periods at voltages ranging from 115 to 125 volts.

**Black-Scholes model**

An option-pricing model initially derived by Fischer Black and Myron Scholes in 1973 for securities options, and later refined by Black in 1976 for options on futures.

**Blending**

- (Gas) Mixing gases of different specifications to produce one within the required gas specification – eg, to within the specification required for transportation within the UK's National Transmission System.
- (Crude) Sometimes crudes are blended near source when the same storage terminal or pipeline is used. An example is Brent Blend – a blend of crudes from various fields in the East Shetland Basin. Also used to create components for gasoline.

**Block rate**

A rate structure that defines different unit charges for various blocks of demand or energy. Block rate pricing allows for fairer pricing when a given customer requires most of its power during off-peak periods, and helps ensure that heavy peak supply users pay their fair share for this costlier energy.

**Bond**

A type of security that functions more like a pawn ticket than a loan. Instead of regular payments of a portion of the loan, the bond issuer agrees to pay the full amount of the loan plus all due interest on or before a specific date in the future. The repayment date is referred to as the date when the bond reaches maturity.

**Bond rating**

A method of assessing the investment safety of a bond issue or similar form of security. Letter or number ratings are assigned by rating firms which specialise in assessing the ability of a bond issuer to repay. The highest rating is AAA, also referred to simply as 'triple-A'. Most municipal and utility bond issues receive fairly high ratings (A or better). Investment safety is not necessarily the same as investment quality. Typically, the higher the bond rating, the lower the interest paid on the bond.

**Book**

The total of all forward positions held by a trader or company.

**Book transfer, book out**

The transfer of title of a cash commodity to the buyer without a corresponding physical movement.

**Borderline customer**

An energy customer who receives service from a provider in one territory and is billed by a provider in another territory.



**Box**

To buy/sell mis-priced options and hedge the market risk using only options, unlike the conversion or the reversal, which use futures contracts. If a certain strike put is underpriced, the trader buys the put and sells a call at the same strike, creating a synthetic short futures position. To get rid of the market risk, the trader sells another put and buys another call, but at different strike prices.

**Box spread**

An options market arbitrage in which both a bull spread and a bear spread are established for a riskless profit.

**Breakeven point**

The underlying futures price at which a given options strategy is neither profitable nor unprofitable.

For call options, it is the strike price plus the premium.

For put options, it is the strike price minus the premium.

**British Thermal Unit (BTU), MBTU, MMBTU**

- A standard unit of measurement used to denote both the amount of heat energy in fuels and the ability of appliances and air conditioning systems to produce heating or cooling. A BTU is the amount of heat required to increase the temperature of a pint of water (which weighs exactly 16 ounces) by one degree Fahrenheit. Since BTUs are measurements of energy consumption, they can be converted directly to kilowatt-hours (3412 BTUs = 1 kWh) or joules (1 BTU = 1,055.06 joules).
- MBTU stands for one million BTUs, which can also be expressed as one decatherm (10 therms). MBTU is occasionally used as a standard unit of measurement for natural gas and provides a convenient basis for comparing the energy content of various grades of natural gas and other fuels. One cubic foot of natural gas produces approximately 1,000 BTUs, so 1,000 cu.ft. of gas is comparable to 1 MBTU.
- MBTU is occasionally expressed as MMBTU, which is intended to represent a thousand thousand BTUs.

**Broker**

- An agent or facilitator in a deregulated energy market who acts as an intermediary between energy producers and energy consumers, or alternately between any two parties engaged at any point in the distribution chain between producer and consumer.
- Unlike marketers, brokers never actually own the commodity traded between the parties, or the means of producing or consuming that commodity. Instead they act on behalf of one or both parties in the transaction, earning a preset commission on the sale itself rather than a percentage of the total sale's value. In addition to assisting with transactions and negotiations, an energy broker may also perform duties ranging from aggregation and firming to arrangement of ancillary services for the customer.

**Bulge**

A rapid advance in futures prices.

**Bulk power market, wholesale power market**

An exclusive type of energy market that is restricted to wholesale suppliers and retailers (resellers) and a few select large-scale customers. Retailers who acquire energy on the wholesale market for resale elsewhere are typically responsible for providing any ancillary services needed by their eventual customers. These services can include peak supply and back-up service, which may also be acquired on the wholesale market.

**Bulk power supply, wholesale power supply**

The actual power and the infrastructure (generating plants, transmission lines and other required equipment) that produces power that is made available for sale on the bulk power market or directly to retail customers.

**Bull spread**

An option spread trade that reflects a bullish view on the market, usually the purchase of a call spread.

**Bundled service**

Energy provisions in which all needed services are provided as a single package, usually by a single provider who provides a single invoice. While energy provision might appear to be a single service, it actually consists of numerous specific services, which are all required before an end-use customer can receive energy. These services include generation of energy, transmission of electricity, distribution from the transmission system, metering and billing, and support functions required to maintain consistent supply. Before the energy industry was deregulated, bundled service was the norm. The same services are still needed, but different suppliers can now provide individual component services.

**Butterfly spread**

The simultaneous purchase of an out-of-the-money strangle and sale of an at-the-money straddle. The buyer profits if the underlying remains stable, and has limited risk in the event of a large move in either direction.

**Buyer's market**

A market situation in which there is an abundance of goods available. The hence buyers can afford to be selective and may be able to buy at less than the price that previously prevailed. (See Seller's market)

**Buying hedge**

Also called a long hedge. Describes the buying of futures contracts to protect against possible increased costs of commodities that will be needed in the future.

**Buy-through**

When a customer requires energy from a utility which is beyond what that utility can normally supply, the utility will need to make additional supply arrangements to ensure availability of energy for this customer.

### Calendar spread, time spreads

- The price differential, or spread, that may arise between differently dated futures contracts; Time spreads can be mitigated by purchasing options on the difference between average annual prices. In effect, such options provide protection against a reshaping of the forward price curve.
- Used for trading in which the parties purchase a certain number of futures contracts for a specific month and simultaneously sell the same number of futures contracts for a different month.

### Call option, put option

- Calls and puts, as they are commonly called, are types of derivative financial securities, traded privately and on stock markets, which set a fixed price for a stock, bond or other commodity and an expiry date after which the owner of the option can no longer buy the commodity (call option) or sell it (put option).
- The owner bets that the commodity the option represents will be worth more than the fixed price in the option some time before the call option expires. If it never reaches a worthwhile price, the owner doesn't have to purchase the commodity, but they lose everything they paid for the option. If it does reach a worthwhile price, the owner can either exercise the right to buy the commodity, or sell the option to someone else willing to exercise the option.
- Put options function in reverse. In this case, there is a buyer who will purchase the commodity at the predetermined price regardless of whether its value rises or falls, but if the owner of the put option wants to make money, they have to buy the commodity at a lower price in order to resell it at a profit. Owners of put options hope that the value falls, because they can then buy the commodity at the low price and sell to the pre-existing buyer at the higher predetermined price. If the price never reaches an agreeable level for the owner of the put, they can allow the option to expire and not purchase the commodity, and all the owner loses is what they paid for the put.
- The fixed or predetermined price used in call and put options is referred to as the strike price or exercise price.

### Call spread

An options position formed by the purchase of a call option at one level and the sale of a call option at some higher level. The premium received by selling one option reduces the cost of buying the other, but participation is limited if the underlying goes up.

### Callable swap

A swap in which the fixed-rate payer has the right to terminate the swap after a certain time if rates fall. Often done in conjunction with callable debt issues, where an issuer is more concerned with the cost of debt than the maturity. In some definitions of a callable swap, the fixed-rate receiver has the right to terminate the swap. Also known as a cancellable swap.

### Cap

A supply contract between a buyer and seller, whereby the buyer is assured that he or she will not have to pay more than a given maximum price.

### Capacity

- The maximum amount of power, normally expressed in megawatts, that a given system or subsystem can carry or produce at a particular moment, and is typically used to represent the real production capability rating of a generation or transmission system.
- Generating capacity denotes the maximum amount of power that can be produced by a given facility. Load capacity or transmission capacity denotes the maximum amount of energy that can be transmitted through a system. Flow capacity is measured in tons, tonnes, cubic feet or cubic meters, and indicates the maximum amount of gas or liquid that can be transported through a pipeline.
- Capacity can vary depending on the current state of the system or its capabilities at a given moment, so it is not a fixed or absolute value. For example, a generator's capacity may increase or decrease depending on the type or mixture of fuel used, and a gas pipeline's capacity will vary with changes in the ambient air temperature.

### Capacity charge

- An element in a two-part pricing method used in capacity transactions (energy charge is the other element).
- Also referred to as Demand charge.
- Assessed on the amount of capacity being purchased.

**Capacity factor, plant factor**

The value used to express the average percentage of full capacity used over a given period of time.

- **Capacity Factor:** Can apply to an individual generating unit or any collection of generating units.
- **Plant factor:** Refers to the capacity factor of an entire generating facility including all available generating units.

**Capacity options**

The right to access the output of a plant, whose generation is specifically earmarked.

**Capacity release, buy release**

A market or customer for energy, which a customer has contracted or requested but is not being used by that customer.

**Capacity sale**

A sale of wholesale energy that will be used to meet peak demand.

**Capacity trading**

Trading of transportation rights which has been facilitated through the use of Electronic Bulletin Boards (EBBs) or Electronic Data Interchange.

**Capacity utilisation**

Computed by dividing production by productive capacity and multiplying by 100.

**Capital (financial)**

The line items on the right side of a balance sheet that include debt, preferred stock, and common equity. A net increase in assets must be financed by an increase in one or more forms of capital.

### Capital investment, capital cost, utility assets

#### Capital investments:

- Assets purchased with investors' money.
- Any cost incurred in the acquisition of an asset is a capital cost.
- Usually thought of as meaning investments related to real estate and/or structures, but in a practical sense, it can include any investment in anything that can be sold for cash.
- Assets and capital investments does not include investment in salaries, fuel, maintenance, or any commodity that doesn't have cash value on the open market.
- Utility assets are the cash-value assets that a utility owns. They can include both capital and non-capital investments.

**Capital costs:** Include costs for land, taxes, surveying, construction, inspection, materials, labour, and interest on loans or bonds.

Do not include any costs incurred once the facility is functional, although late-discovered expenses must often be added to capital cost well after construction is complete.

#### Captive coal

Coal produced and consumed by the mine operator, a subsidiary, or parent company (for example, steel companies and electric utilities).

#### Captive customer, Core customer

- **Captive customer:** Energy consumers who can only acquire cost-effective energy from a single source and have no reasonable alternative source. Residential and small commercial customers, for example, are considered captive to local utilities due to the high price at which they would need to import energy or create their own.
- **Core customer:** Natural gas customers, but it may occasionally be applied to electrical customers.

#### Carry forward

If, in a given contract period (often a year), a buyer has taken over and above the annual contract quantity then, if there is no accumulated make-up gas, the buyer can carry forward this excess for future use. The buyer may use the carry forward to offset the take-or-pay obligation, though there may be a limit to the amount of carry forward allowed in any given contract period.

**Carrying charge**

The total cost of storing a physical commodity, including storage, insurance, interest, and opportunity cost.

**Cash-and-carry arbitrage**

A strategy in which a trader generates a riskless profit by selling a futures contract and buying the underlying to deliver into it. The futures contract must be theoretically expensive relative to the underlying. If the futures are theoretically cheap compared to cash, the trader could sell the underlying and buy the futures – reverse cash-and-carry arbitrage.

**Central power**

Central power is the opposite of distributed power. The generation of electricity in large power plants with distribution through a network of transmission lines for sale to a number of users.

**Certified Emission Reduction (CER)**

CERs are generated by Clean Development Mechanism (CDM) Projects. One CER corresponds to a carbon credit of one tonne CO<sub>2</sub> equivalent. Since 2008 CERs can be credited up to a certain percentage of the total reduction liabilities of operating facilities within EU ETS.

**CFD**

Cubic feet per day. Usually used to quantify the rate of flow of a gas well or pipeline.

**Cherry-picking**

Granting special treatment to large or desirable customers at the expense of small or undesirable customers.

Can apply to any commercial activity in which product or service providers find it unprofitable to offer equal treatment for all customers.



**Chooser option**

The holder of a chooser option can choose, after a predetermined period, between a put and a call option. Similar to a straddle, but cheaper because the holder must choose between the put or the call before the instrument expires.

**City Gate**

Means the location at which there is a change in gas ownership or transportation responsibility from a pipeline to a local distribution company or gas utility.

**Clean Air Act (CAA)**

A US federal statute passed in 1963 and amended several times since then, which regulates the type and level of pollutants that can be emitted into the atmosphere. In 1970, the administration and enforcement of the CAA was passed to the newly-created Environmental Protection Agency, and the EPA retains these powers to this day.

The CAA limits the amount and type of allowable emissions from devices ranging from large-scale generating facilities to privately-owned automobiles, and covers emissions ranging from carbon dioxide and sulphur dioxide (the primary pollutants produced in coal-fired energy generation) to chlorofluorocarbons (volatile chemicals such as Freon used in cooling systems).

**Clearinghouse**

An Exchange-associated body charged with the function of insuring the financial integrity of each trade. Orders are 'cleared' by means of the clearinghouse acting as the buyer to all sellers and the seller to all buyers.

**Clearing members**

Members of an exchange who accept responsibility for all trades cleared through them and share secondary responsibility for the exchange's clearing operation by contributing to the guarantee fund and standing for potential assessment in the event of a default by another clearing member.

### Cogeneration, 'cogen'

The simultaneous generation of electrical and thermal energy where both forms of energy are put to productive use. The addition of cogeneration capability to generating facilities and industries that produce large amounts of heat energy helps ensure that waste heat (usually in the form of steam or hot water) is used efficiently for heating, industrial use, agriculture or conversion into electricity.

### Coincident demand, coincident peak demand, non-coincident peak demand

- **Coincident demand:** The energy demand required by a given customer or class of customers during a particular time period.
- **Coincident peak demand:** The energy demand by that group during periods of peak system demand. Customer's coincident peak demand is usually calculated from meter readings taken at the time when the customer's demand is likely to be highest.
- **Non-coincident Peak Demand:** Calculated using several readings taken at different times to determine what their actual peak demand periods may be.

### Collar

A financial strategy designed to ensure an interest rate within a given range. It involves arranging for a maximum interest rate (rate cap) for the life of a contract by forfeiting a lower minimum rate (floor) in return for a favorable maximum rate.

### Combined cycle

An electric generating technology in which electricity is produced from otherwise lost waste heat exiting from one or more gas (combustion) turbines. The exiting heat is routed to a conventional boiler or to a heat recovery steam generator for utilisation by a steam turbine in the production of electricity. This process increases the efficiency of the electric generating unit.

### Combined cycle power plants

Twin-stage power plants that deliver 50-60% higher fuel efficiency. In the first stage, a gas (natural gas, gaseous coal, etc.) is heated, cleaned, and used to run a gas turbine that produces electricity. In the second stage, the waste heat from the gas turbine, from gas cleaning, and from the gasification processes are used to raise the pressure of steam, which is in turn used for generation of additional power. By operating a combination of both these stages, a combined cycle power plant is able to maximize the efficiency of the fuel used.

**Combined pumped-storage plant**

A pumped-storage hydroelectric power plant that uses both pumped water and natural streamflow to produce electricity.

**Commission**

Commission is the fee that a futures broker charges for the execution of an order.

**Commitment or open interest**

The number of open or outstanding contracts for which an individual or entity is obligated to the Exchange because that individual or entity has not yet made an offsetting sale or purchase, an actual contract delivery, or, in the case of options, exercised the option.

**Commercial customer**

- A non-industrial business consumer of energy.
- One of three standard classifications of customers for commercial energy, along with residential and industrial customers.
- Commercial customers are usually service sector businesses, although some manufacturers with low energy demands may also qualify.

**Commercial operation**

Commercial operation begins when control of the loading of the generator is turned over to the system dispatcher.

**Committed load**

Energy load or demand that has been committed or dedicated to a particular customer, or is sold for the purpose of serving a given customer. The term is usually used to refer to energy committed to the customer for the next hour or the next day.

**Commodity future**

A futures contract on a commodity. Unlike financial futures, the prices of commodity futures are determined by supply and demand as well as the cost-of-carry of the underlying. Commodity futures can, therefore, either be in contango (where futures prices are higher than spot prices) or backwardation (where futures are lower than spot).

**Commodity Futures Trading Commission (CFTC)**

Commodity Futures Trading Commission is a federal regulatory agency authorised under the Commodity Futures Trading Commission Act of 1974 to regulate futures trading in all commodities. The commission comprises five commissioners. One of them is designated as chairman, all appointed by the President, subject to Senate confirmation.

**Commodity Pool Operator (CPO)**

Acts as a general partner of commodity pools. CPOs hire independent Commodity Trading Advisers to handle daily trading decisions. A CPO is responsible for the pool's administration, structure, and selecting and monitoring the traders who conduct transactions using the fund's money.

**Commodity swap**

- Enables both producers and consumers to hedge commodity prices. The consumer is usually a fixed payer and the producer a floating payer: if the floating-rate price of the commodity is higher than the fixed price, the difference is paid by the floating payer, and vice versa. Usually only the payment streams, not the principal, are exchanged, although physical delivery is becoming increasingly common.
- Executed to hedge risks which cannot readily be hedged with futures contracts. This could be a geographical or quality basis risk, or it could arise from the maturity of a transaction.

**Commodity trading adviser (CTA)**

Directs trading in the managed accounts of a commodity pool. CTAs are professional money managers who manage client assets on a discretionary basis, using global futures markets as an investment medium.

**Competitive power supplier**

Any supplier of energy within a competitive marketplace.

May be actual energy producers or intermediaries such as marketers who resell energy acquired on the wholesale market.

**Competitive retail electric service**

When two or more parties compete for end-use energy consumers within a given market, the retail service provided by all parties is considered to be competitive.

**Competitive transition charge (CTC), exit fee**

- When a retail or wholesale energy customer switches from one supplier to another, a fee is often levied to compensate the supplier for costs the supplier may have incurred to make sufficient energy available for that customer.
- Often necessary when generating facilities used by an exiting customer might otherwise be operated at a loss or shut down completely.
- Not the same as a transition charge, which refers to transition from a regulated to a deregulated market. Competitive transition charges refer only to transition from one competing supplier to another.

**Compound option**

An option that allows its holder to purchase or sell another option for a fixed price. For example, the purchase of a European-style 'call on a put' means that the compound option buyer obtains the right to buy on a specified day (the expiry of the overlying option) a put option (the underlying option) at the overlying option's strike price.

**Congestion**

Clogging and stress at a point where something must pass. Congestion in energy transmission systems occurs when local demand for energy approaches the limits of the transmission system's ability to supply it.

**Constraints**

- Limitations in the capacity of transmission systems to transport power from generator to consumer.
- Any factor that contributes to this limitation is a system constraint.

**Consumer Price Index (CPI)**

An economic measure calculated as the average change in prices for a fixed group (basket) of products and services considered to be either essential or universally desirable for a given population or segment of the population.

**Consumption (fuel)**

The amount of fuel used for gross generation, providing standby service, start-up and/or flame stabilisation.

### Contango

Description for an energy market where the anticipated value of the spot price in the future is higher than the current spot price. When a market is in contango, market participants expect that the spot price will go up. The reverse situation is described as backwardation.

### Contingent premium option

An option for which the purchaser pays no premium unless the option is exercised. The premium eventually paid is equal to the premium payable on a normal option, divided by the option delta. Hence the price increases dramatically for out-of-the-money options.

### Contingent swap

A swap which is only activated when rates reach a certain level or a specific event occurs. For example, drop-lock swaps only activate if rates or prices drop to a certain level or if a specified level over a benchmark is achieved.

### Contract demand

A customer's contract demand is the amount of power a customer agrees to pay to have available at all times. Because this refers to power that must be made available, as opposed to energy that can actually be consumed, contract demand is measured in kilowatts, not kilowatt-hours.

### Contract path

- The shortest or most desirable path between two points on an electrical transmission or distribution system.
- To contract a path is to arrange for a specific energy transmission route for transmission of energy with the owner or controller of that route.

### Contract price

Price of fuels marketed on a contract basis covering a period of one or more years.

### Contract terms

- The specific details or the sum total of all details that make up an agreement between buyer and seller.
- Contract terms include price, availability, reliability and maximum.

### Contracts for differences (CfD)

A type of bilateral contract arrangement in which an energy producer or seller receives a fixed price for energy plus an adjustment value to cover any differences between the agreed-upon fixed price and the actual market price of the energy at the time it is delivered.

### Control area

A region within an electrical distribution grid that acts as a balancing point and diagnostic centre for the regions around it.

### Control area balancing function

One of the primary functions served by control stations within control areas is balancing of the energy supply. These stations feed additional energy into the area when needed and can also reduce or reroute energy flow outside of the area as needed. This balancing function is essential for meeting the area's reliability requirements on an hour-to-hour basis.

### Conversion

A delta-neutral arbitrage transaction involving a long futures contract, a long put option, and a short call option. The put and call options have the same strike price and same expiry date.

### Co-op, rural electric cooperative, electric membership cooperative, distribution co-op

- Energy co-ops are non-profit institutions run by the customers that the cooperative serves. They are formed to help reduce individual cost for products and/or services and share expenses among a group of customers.
- A co-op usually refers to a rural electric cooperative, which is a utility owned and operated by a rural region or municipal district for that region's use.

### Correlation

- A measure of the degree to which changes in two variables are related.
- Correlation ranges between plus one (perfect correlation – the same amount of movement in the same direction) and minus one (perfect negative correlation – the same amount of movement in opposite directions). Like volatility, it can be calculated from historical data, but such calculations are not necessarily good predictors of future behaviour.

### Cost

The amount paid to acquire resources, such as plant and equipment, fuel, or labour services.

### Cost allocation

The process of determining who pays what and when for expenses related to acquiring or providing a given commodity.

**Cost of capital**

The expense incurred in obtaining funds used as capital assets is referred to as the cost of capital.

**Cost of carry**

The difference between the cost of financing an asset and the interest received on that asset. If the financing cost is lower than the interest, the asset is said to have a positive cost of carry; if higher, the cost of carry is negative.

**Cost of service, cost-of-service (COS), cost-of-service pricing**

- **Cost of Service:** The cost of providing a service, in the energy industry and other fields. It can also be used as an adjective (cost-of-service or simply COS) to denote rate structures, analysis and expenses among other things.
- **Cost-of-Service Pricing:** The setting of a price for a service based on the costs incurred in providing it. Cost-of-service pricing is a common method for setting prices for some types of publicly-funded services. It is sometimes applied to rate structures for privately-held utilities in deregulated markets to ensure that the provision of an essential service in a difficult or expensive market isn't limited to a select few who can afford it.

**Cost shifting**

The act or process of transferring the responsibility for a given cost from one party to another.

**Council of European Energy Regulators (CEER)**

The CEER is the organisation in which independent national regulators of electricity and gas in Europe voluntarily cooperate. The CEER is a preparatory body for the work of the European Regulators Group for Electricity and Gas (EREG). The CEER is a not-for-profit association under Belgian law.



### Covered option

- Where the writer owns the underlying asset on which the option is written.
- A covered call would only be written if the writer believed volatility to be overpriced in the market; the lower the volatility, the less premium the writer gains in return for giving up their upside in the underlying.
- A covered put option is one where the writer sells the option while holding cash. This technique is used to increase income by receiving option premium. If the market goes down and the option is exercised, the cash can be used to buy the underlying to cover. Covered put writing is often used as a way of target buying: if an investor has a target price at which he wants to buy, he can set the strike price of the option at that level and receive option premium to increase the yield of the asset. Investors also sell covered puts if markets have fallen rapidly but seem to have bottomed, because of the high volatility typically received in the option.

### Crack spread

- A calculation of the worth of a barrel of crude oil in terms of the value of its refined products such as gasoline and heating oil.
- Crack spreads may be based on a variety of refinery models, and also depend on the type of crude input.
- Expressed usually in dollars and cents per barrel of crude. To calculate the spread, the cents per gallon product prices are multiplied by 42 (gallons per barrel), and subtracted from the crude oil price. For example, when heating oil futures cost US\$0.40 per gallon and NYMEX light, sweet crude oil is priced at US\$12 a barrel, the heating oil crack spread in dollars per barrel =  $US\$0.40 \times 42 = US\$16.80 - US\$12 = US\$4.80$ .

### Cramming

When a customer is charged or billed for additional services without their knowledge or consent.

### Credit derivative

Credit derivatives' payouts depend in some way on the creditworthiness of an organisation (which could be a sovereign state, a government body, a financial firm or a corporate), as gauged by objective financial criteria or a third-party evaluation from a recognised credit rating agency such as Moody's Investors Service or Standard & Poor's. Although credit derivatives might not appear to have an underlying in the conventional sense, it is often argued that they are based on the cost of a credit event, or equivalently, the premium that would have to be paid to transfer the credit risk of a given transaction to a third party. Most importantly, these derivatives unbundle credit risk from other risks. For example, the holder of a floating-rate note issue can separate the credit risk (that the issuer will default) from the interest rate risk (that the coupon will fall). There are two major varieties of credit derivative. The first category, which includes credit default swaps and put options, activates in the event of a credit event, such as a default or downgrade of debt. A second type of credit derivative is the credit spread forward or option. The underlying for these contracts is the spread between two otherwise identical securities which depends only on the creditworthiness of the issuer. Swaps under which the total rate of return on an index is swapped for some reference rate are sometimes also referred to as credit derivatives.

### Credit rating

A published ranking, based on detailed financial analysis by a credit bureau, of one's financial history, specifically as it relates to one's ability to meet debt obligations. The highest rating is usually AAA, and the lowest is D. Lenders use this information to decide whether to approve a loan.

### Credit risk

The risk that a financial loss will be incurred if a counterparty to a (derivatives) transaction does not fulfill its financial obligations in a timely manner. It is therefore a function of: the value of the position exposed to default (the credit or credit risk exposure); the proportion of this value that would be recovered in the event of a default and the probability of default; the probability of default, regardless of the value that stands to be lost.

### Credit Value-at-Risk (CVaR)

- The worst loss expected to be suffered due to counterparty default over a given period of time with a given probability. The time period is known as the holding period and the probability is known as the confidence interval.
- Not an estimate of the worst possible loss, but the largest likely loss. For example, a firm might estimate its CVAR over 10 days to be US\$100 million with a confidence interval of 95%. This would mean there is a one-in-twenty (5%) chance of a loss larger than US\$100 million in the next 10 days.

### Cross trade

Offsetting match by a broker of the buy order of one customer against the sell order of another, or a match of a trade made by a broker with his customer, a practice that is permissible only when executed in accordance with the Commodity Exchange Act, Commodity Futures Trading Commission regulations, and rules of the contract market. Neither NYMEX Division nor COMEX Division members are permitted to take the opposite side of a customer's order, except, under certain circumstances, for trades involving long-dated (nine months or more forward) COMEX Division copper futures.

### Crude oil

A full-ranging hydrocarbon mixture produced from a reservoir after any associated gas has been removed. Among the most commonly traded crudes are the North Sea's Brent Blend, the US's West Texas Intermediate (WTI) and Dubai.

### Curtailable demand, curtailable rate

- **Curtailable Demand:** Refers to actual energy, not the demand for it, and means the load (available energy) on a power distribution network or grid that can be decreased (curtailed) at a moment's notice by an independent service operator.
- **Curtailable Demand:** It can also refer to energy that is normally made available to one customer or group of customers but which could be rerouted to another customer if needed.
- **Curtailable Rates:** Are typically offered at a discount on the understanding that an ISO could reroute that energy to another customer without notice. When a customer's curtailable demand is rerouted to someone in greater need or willing to pay a higher price, that customer won't receive the energy they ordered, but they won't be charged for it either. Large-scale customers with curtailable demand may include breweries, food processing plants, and some heavy industries that can use energy at any time but may not care about losing that energy if it saves them a certain amount of money to do so.

**Customer**

Any party that purchases energy.

**Customer charge**

A charge levied on a customer to cover the costs of serving that particular customer, usually applied in situations where a utility incurs special costs to meet a given customer's needs. These charges are levied whether or not the customer actually uses any energy during the billing period. For a large-scale commercial customer, this charge may be applied to cover costs of making additional reserves available for that customer. For small individual customers, it may be applied to cover the costs of maintaining the customer's account and billing records, as well as a proportionate share of the costs the utility incurs to make power available to all residential customers.

**Customer class**

In the energy industry, electricity consumers are divided into classes for purposes of rate-setting, energy planning, load distribution and cost analysis among others. The most common classification divides energy customers into four classes: residential, commercial, industrial, and a catch-all group referred to as other public authorities. Each class is assumed to have somewhat different needs and progressively higher energy demands than the previous class. Residential is distinguished from commercial use by the nature of energy use, not by the amount of energy used. A residential customer may use more energy than a commercial customer. Industrial users are the heaviest private users. Other public authorities may include governments, street and highway lighting systems, transit and railway authorities, and energy sold to other utilities.

**Customer facility charge**

A charge added to a customer's energy bill which covers the costs of maintaining the facilities needed to deliver energy to that customer. Facilities in this context can include everything from transmission systems to accounting and meter reading.

**Customer service charge**

An amount, usually a flat fee, which is applied to all customers (or, alternately, applied only to customers who are not using energy or using only small amounts of energy) to cover the cost of maintaining the account, similar to an account administration charge. It is intended to ensure that the utility can recover costs it may incur from maintaining an inactive account or an account with very low billing, and it is usually left up to the utility to decide how and when to levy this charge.

**Data request**

A request for information from one party made by another party.

**Day-ahead market**

The market for energy for the following day, or more specifically, the market for energy 24 hours in advance of a given time in any day.

**Day-one gain**

The application of the exit price as a basis for determining fair value may lead to a so-called 'Day-one' gain or loss when the transaction price differs from the exit price.

**Day trade**

The purchase and sale of a futures or an options contract on the same day.

**Debt capital**

Cash-value assets that a company, individual or other entity has acquired by borrowing money.

A form of paper wealth that gives a party the ability to use money they don't actually own. Debt capital must eventually be repaid, usually with interest.

**Debt coverage, debt service coverage, interest coverage ratio**

- **Debt Coverage, or Debt Service Coverage:** The ability of a debtor to repay their debts. Debt coverage is often used interchangeably with interest coverage ratio to indicate a party's debt-handling capacity, but the two are not the same.
- **Interest coverage Ratio:** Expressed as the ratio of annual net income to annual interest on outstanding debts. While there is no general rule, a ratio of net income to interest of 2:1 is usually considered healthy, since it suggests that the debtor can earn twice as much in a year as it can afford to pay in interest charges.
- **Debt service:** When full or partial repayment is made on a debt, the party making the payment is said to be servicing the debt.

**Debt-equity ratio, debt ratio**

The amount of money owed as compared to the amount of assets owned.

**Decentralised energy systems**

Energy systems that supply individual, or small-groups, of energy loads.

**Declining block rate**

An energy fee structure for high-volume customers that decreases the cost of energy as the customer's consumption increases. Under this type of structure, the customer purchases an initial supply of energy for a given amount, and additional quantities can be acquired at lower per-unit prices as the amount increases.

**Decommissioning**

The process of removing a power plant, apparatus, equipment, building, or facility from operation.

**Decoupling**

An accounting technique that separates the amount of a commodity sold from the total revenues expected from those sales. This technique is often recommended for use in the energy industry by conservationists and some financial planners since it provides a means of insuring that utilities don't oversell energy to meet cost requirements or maintain profit levels.

**Decremental cost**

- The part of the cost of producing energy that could be avoided if demand for that energy did not exist or if alternate energy supplies were available.
- Refers only to the cost of producing the energy, and differs from avoided cost, which refers to all fixed costs whether or not they are related to production, as well as costs related to depreciation of assets and other expenses.

**Default provider, provider of last resort**

When the energy market is deregulated in a given area, it is assumed that the regulated market was a monopoly, and that many customers will either stay with the provider they had in the regulated market or will not find a competitive supplier willing to serve them. The default provider is the energy provider who makes service available to these customers. This provider, also referred to as the provider of last resort, may be a disaggregated version of their original provider, or a separate entity set up by a local utility or government agency to provide service to customers who might otherwise be orphaned or have no access to competitive suppliers.

**Deferred swap**

A swap under which the payments are deferred for a specified period, usually for tax or accounting reasons. Not to be confused with a forward swap, where the entire swap is delayed.

### Degree day, heating degree day (HDD), cooling degree day (CDD)

A measure of the deviation of daytime temperature from a predefined standard. This measurement is commonly used to calculate heating and cooling loads as seasons change. Average daytime temperature is subtracted from 65°F (18°C), and the result produces a heating degree day or cooling degree day value. Negative values are expressed as heating degree days; positive values as cooling degree days. For example, if the average temperature in a given week is 50°F, subtraction yields a value of -15. When that figure is multiplied by the seven days in a week, the result is 75 heating degree days.

Degree days are measured over extended periods to assist in estimating power and energy costs, but each day is calculated separately. If mean daytime temperature for a whole year is 64°F, it doesn't produce a value of 365 heating degree days, because each day that heating or cooling is required adds to the total number of degree days for the year.

### Delivery

The term has distinct meaning when used in connection with futures contracts. Delivery generally refers to the changing of ownership or control of a commodity under specific terms and procedures established by the exchange upon which the contract is traded. Typically, except for energy, the commodity must be placed in an approved warehouse, precious metals depository, or other storage facility, and be inspected by approved personnel, after which the facility issues a warehouse receipt, shipping certificate, demand certificate, or due bill, which becomes a transferable delivery instrument. Delivery of the instrument is usually preceded by a notice of intention to deliver. After receipt of the delivery instrument, the new owner typically can take possession of the physical commodity, can deliver the delivery instrument into the futures market in satisfaction of a short position, or can sell the delivery instrument to another market participant who can use it for delivery into the futures market in satisfaction of his short position or for cash, or can take delivery of the physical himself. The procedure differs for energy contracts. Bona fide buyers or sellers of the underlying energy commodity can stand for delivery. If a buyer or seller stands for delivery, the contract is held through the termination of trading. The buyer and seller each file a notice of intent to make or take delivery with their respective clearing members, who file them with the Exchange. Buyers and sellers are randomly matched by the Exchange. The delivery payment is based on the contract's final settlement price.

**Delivery charge**

A fee levied by an electric utility for the actual delivery of electricity to a customer. The charge is applied to cover system reliability, emergency response and outage recovery charges.

**Delivery point**

A point on the grid where one electric utility can transfer its available energy to another utility's system.

**Delta**

Option risk parameter that measures the sensitivity of an option price to changes in the price of its underlying instrument.

**Delta hedging**

An option is delta-hedged when a position has been taken in the underlying that matches its delta. Such a hedge is only effective instantaneously, because the option's delta is itself altered by changes in the price of the underlying, interest rates, the option's volatility and time to expiry. A delta-hedge must, therefore, be rebalanced continuously to be effective.

**Demand**

Energy requirements for a given customer or area.

**Demand billing**

Demand billing is the demand upon which billing to a customer is based, as specified in the rate schedule or contract. The billing demand need not coincide with the actual measured demand for a billing period.

**Demand charge, capacity charge**

- An additional billed amount that covers the difference between the power a customer expects to have available and the energy that the customer actually uses.
- Calculated based on the difference between a customer's peak energy use during a billing period and their nominal use (normal or hour-to-hour use) during the same period. If the customer expects to have substantially more power available to them than they actually use, then a demand charge is applied to cover this difference.
- Not a means of gouging customers by charging for unused energy. Instead they are a means of insuring that customers can have larger-than-normal supplies of energy available to them at a moment's notice.



**Demand costs**

Expenses that vary with the demand for energy, which include fixed costs for production and transmission and some distribution costs.

**Demand forecast**

- An estimate of future requirements.
- An estimate of energy requirements for a given future interval.

**Demand interval**

- A period of time in which system, group, or customer demand is measured.
- Periods of measured or expected energy use ranging from 15 minutes to one hour.

**Demand options**

Voluntary measures that a utility or energy customer can take to alter either their total energy requirement or their pattern of energy use (load shape). These options can include rate structures such as time-of-use pricing that penalise heavy use of energy during peak demand periods and reward off-peak use, and enforcement of conservation standards by the utility or adoption of conservation practices by consumers, among others.

**Demand ratchet**

A means of applying a minimum billing to a customer who may have inconsistent or seasonal energy requirements.

**Demand-side management (DSM)**

An ancillary service offered by utilities, energy suppliers or private companies as a value-added service to assist the customer with getting the best value from their energy expenses.

Includes everything from efficiency-related planning assistance for new construction to sourcing of alternative suppliers to consulting on conservation programs to full management of a company's energy efficiency programs.

**Demand-side management costs**

The costs incurred by the utility to achieve the capacity and energy savings from the Demand-Side management program. Costs (expenditures) incurred by consumers or third parties are to be excluded. The costs are to be reported in nominal dollars in the year in which they are incurred, regardless of when the savings occur. Program costs include expensed items incurred to implement the program, incentive payments provided to consumers to install Demand-side management measures, and annual operation and maintenance expenses incurred during the year. Utility costs that are general, administrative, or not specific to a particular Demand-side management category are to be included in 'other' costs.

**Departing member**

A member consumer served at retail by an electric cooperative corporation that has given notice of intent to receive generation services from another source or that is otherwise in the process of changing generation suppliers. These persons shall nonetheless remain members of the electric distribution cooperative corporation for purposes of distribution service.

**Depreciation**

An accounting practice that is used to assign a cash value to something whose value decreases with age or wear and tear. Depreciation can mean either the process of determining that value, or the amount of value lost over a given period of time.

**Depository or warehouse**

A document issued by a bank or warehouse indicating ownership of a commodity stored in a bank depository or warehouse. In the case of many commodities deliverable against futures contracts, transfer of ownership of an appropriate depository receipt may affect contract delivery.

**Derating**

The production of energy by a system or appliance at a level less than its design or nominal capacity.

**Deregulation**

The relaxation, reduction or complete removal of legislated restrictions from an industry or industry sector whose activities were previously under strict government supervision.

**Derivatives**

Types of securities that have no real value of their own, but whose value depends on, or is derived from, some other value such as a prevailing market price, stock value or market index. Typically, the 'other value' isn't established, and will only be known at some time in the future.

Commonly used in the energy industry as risk management instruments. Properly used, they can provide insurance against interest rate or energy price hikes, improve the investment quality of a utility's issues of bonds or other securities, or offer any number of other benefits.

**Direct utility costs**

A utility cost that is identified with one of the DSM program categories (ie, Energy Efficiency, Direct Load Control, Interruptible Load, Other Load Management, Other DSM Programs, Load Building).

**Digital option (Binary option)**

Options pay either a fixed sum or zero depending on whether the payoff condition is satisfied or not – eg, cash-or-nothing options, and asset-or-nothing options.

**Digital swap**

The fixed leg of a digital swap is only paid on each settlement date if the underlying has fulfilled certain conditions over the period since the previous settlement date. The premium for such a swap is paid in instalments at each payment date.

**Disaggregation, deintegration, structural unbundling**

The act or process of separating a vertically integrated utility into its functional component parts. This separation is accomplished either by the sale of divisions of a company or by restructuring these divisions into independent commercial entities. This process may also be referred to as delamination or disintegration.

**Discounting**

A method of financial and economic analysis used to determine present and future values of investments or expenses.

**Dispatch**

To control flow and direction. Energy dispatch controls how much energy travels through specific transmission stations to end-use service areas. Energy dispatch requires a human operator to schedule, monitor and control distribution of energy.

The process of coordinating the distribution of energy on a moment-to-moment basis to meet changing load requirements.

**Distillate fuel oil**

A general classification for one of the petroleum fractions produced in conventional distillation operations. It is used primarily for space heating, on-and-off-highway diesel engine fuel (including railway engine fuel and fuel for agriculture machinery), and electric power generation. Included are Fuel Oils No.1, No.2, and No.4; and Diesel Fuels No.1, No.2, and No.4.

**Distribution system**

The combination of the physical hardware required to deliver energy between high-voltage transmission lines and end-use customers, and the procedures and processes used to perform the actual delivery. The term can also refer to a company or utility that performs distribution services.

**Downstream**

Activities in the oil and gas industry from a refinery onwards – ie, the distribution and marketing of hydrocarbon products.

**Dutch auction**

- A type of bidding process where the bidders do not know what other participants are bidding. Dutch auctions are often used to acquire baseload supplies.
- Sometimes referred to as silent auction.

**Earnings Before Interest and Taxes (EBIT)**

An operating figure defined as revenues less cost of goods sold and selling, general and administrative expenses. In other words, operating and non-operating profit before the deduction of interest and income taxes.

**Economic dispatch**

A method of managing the operation (dispatching) of generation and transmission facilities to produce the most cost-effective result. Economic dispatch most commonly involves the selection of the lowest-cost available generating units or fuels for powering available units.

**Economic efficiency**

The efficiency with which money is spent or otherwise used as a resource, as opposed to the conservation of financial resources.

**Economic long run, economic short run**

The productive lifespan of a given asset, venture or activity is referred to as its economic long run. It may also mean the time required for a given asset to pay back its investment, or the time required for a given portion of payback.

**Economies of scale**

Economic functions and results relative to size and the ways in which economic values change as the size of the economy changes.

**EEX**

The EEX is located in Germany and offers spot and derivatives trading regarding power, natural gas, emission rights and coal. Settlement of the transactions is ensured by an independent clearing house – ECC AG, an EEX subsidiary.

**Electricity generation, gross**

The total amount of electric energy produced by the generating station or stations, measured at the generator terminals.

**Electricity generation, net**

Gross generation less electricity consumed at the generating plant for station use. Electricity required for pumping at pumped-storage plants is regarded as plant use and is deducted from gross generation.

**Embedded cost**

- The total costs of all assets and ongoing charges incurred in providing and maintaining a supply of energy.
- Costs that are 'embedded' in the system and cannot be changed or separated from the actual costs of producing and generating energy.
- Costs incurred in the past that allow an energy utility to produce or deliver energy in the present. The most common embedded cost is the capital cost of transmission and distribution infrastructure (high-voltage corridors, power lines, transformers, etc.).

**Embedded costs exceeding market prices (ECEMPs)**

- Embedded (unchangeable) costs that drive the cost of delivering energy to the customer above the actual market value of that energy.
- Incurred as a result of a regulatory or contractual obligation.
- Differ from stranded costs in that an ECEMP either has a cash value on the open market or can be recovered by the utility over time. When an embedded cost exceeds what the utility can reasonably expect to recover, it becomes a stranded cost.

**Embedded derivatives**

An embedded derivative is a derivative instrument that is combined with a non-derivative host contract to form a single hybrid instrument. The host contract might be a debt or equity instrument, a lease, an insurance contract or a sale or purchase contract.

**Embedded option**

An option, often an interest rate option, embedded in a debt instrument that affects its redemption.

**Emission(s)**

Substance(s) or pollutant emitted as a result of a process.

**Emissions trading**

Emissions trading is a market-based approach in order to achieve climate protection goals. The sale of emission allowances to a higher price than an emission reduction action would cost, or the purchase of emission allowances in case of higher costs of emission reduction actions, provides an incentive for companies to engage in emission trading. Due to the limited amount of allocated emission allowances evolves a market in which also companies without emission reduction liabilities take part (cap and trade system).

**Emission Reduction Unit (ERU)**

ERU refers to the reduction of greenhouse gases, particularly under Joint Implementation, where it represents one tonne of CO<sub>2</sub> equivalent reduced.

**Enabling agreement**

An agreement somewhat similar to a handshake agreement, in which both parties agree to an exchange but without specifying details such as price, date or terms at the time the agreement is reached.

**End-use customer**

- A customer who acquires energy for their own consumption.
- Customers who acquire energy for provision to other customers are not the actual users of the energy, and are not considered end-use customers.

**End-use services**

Services provided to the actual customer that the customer actually uses as part of energy consumption, and may include anything from energy provision to consulting to back-up services. A service such as billing would not be considered an end-use service unless it is provided in a way that specifically benefits the end-use customer.

**Energy charge**

That portion of the charge for electric service based on the electric energy (kWh) consumed or billed.

**Energy consumption**

The use of energy as a source of heat or power, or as an input in the manufacturing process.

**Energy deliveries**

Energy generated by one electric utility system and delivered to another system through one or more transmission lines.

**Energy efficiency rating, energy efficiency ratio (EER)**

A value that expresses the relative efficiency of devices that consume electricity, more specifically devices that produce heat.

**Energy loss, transmission loss**

- **Energy Loss:** Energy lost or wasted in the transmission of energy from the generator to the eventual customer.
- **Transmission Loss:** Often used in place of energy loss to prevent confusion, since transmission loss means only those losses occurring in the transmission system, which is only a part of the total delivery system for electricity.

**Energy management system (EMS)**

A network control system, usually computerised, which utilities use to monitor various aspects of the generation, transmission and distribution of electricity.

**Entitlement contract**

An agreement between buyer and seller to guarantee a given amount of energy at a given price. The guaranteed price is usually based on embedded costs.

**Environmental Protection Agency (EPA), USEPA**

The US government agency responsible for regulating and overseeing a wide range of environmental issues, one of the most important of which is the impact of industry on the environment. Most commercial energy production has a real or potential impact on the environment. The EPA acts in conjunction with other state and federal regulatory agencies to ensure that all industries, not just energy producers, conform to standards set out for safe and environmentally-friendly behaviour. The agency has the power to impose penalties on businesses that do not meet acceptable standards.

**Equity capital**

The sum of capital from retained earnings and the issuance of stocks.

**EU Allowance EUA**

EUA is the abbreviation for EU Allowance. One EUA is the minimum trading unit in EU emissions trading. One EU allowance enables the owner to emit one tonne CO<sub>2</sub> equivalent.

**European Commodity Clearing AG (ECC)**

Central counterparty for all transactions effected on EEX.



**European option**

An option that may only be exercised on its expiration date.

**European Regulators' Group for Electricity and Gas (EREG)**

The EREG is charged with advising and assisting the European Commission in consolidating the internal energy market in Europe, in particular with respect to preparing draft implementing measures in the field of electricity and gas. The objective is to help ensure a consistent application in all Member States of EU energy legislation.

**European Union Emission Trading Scheme (EU ETS)**

The European Union Emission Trading Scheme (EU ETS) is the largest multi-national, greenhouse gas emissions trading scheme in the world and was created in conjunction with the Kyoto Protocol. It commenced operation in January 2005 with all 25 (now 27) member states of the European Union participating in it. It contains the world's only mandatory carbon trading program. The program caps the amount of carbon dioxide that can be emitted from large installations, such as power plants and carbon-intensive factories, and covers almost half of the EU's carbon dioxide emissions.

**Exchange of Futures for Physical (EFP)**

The conversion of a futures position into a physical position via simultaneous buy/sell transactions.

**Exchange of Futures for Swaps (EFS)**

The conversion of a futures position into a swaps position via simultaneous buy/sell transactions.

**Exchange option**

An option giving the purchaser the right to exchange one asset for another.

**Exchange traded option**

An option traded and cleared on an organised securities or derivatives exchange. Such options are usually, but not always, standardised by strike, maturity and underlying.

**Exercise**

The process of converting an options contract into a futures or physical position.

**Exempt wholesale generator (EWG)**

An EWG is a category of power producer defined by the Energy Policy Act of 1992. EWGs are independent power facilities that generate electricity for sale in wholesale power markets at market-based rates. The Federal Energy Regulatory Commission is responsible for determining EWG status.

**Expenditure**

The incurrence of a liability to obtain an asset or service.

**Externality**

Externalities are environmental, social, and economic impacts of producing a good or service that are not directly reflected in the market price of the good or service.

**Exotic option**

Any option whose payout structure is more complicated than a plain vanilla put or call option. A plain vanilla option pays out the difference between the strike price of the option and the spot price of the underlying at the time of exercise. Examples of exotic options include Asian options, barrier options, digital options and spread options.

**Facility**

An existing or planned location or site at which prime movers, electric generators, and/or equipment for converting mechanical, chemical, and/or nuclear energy into electric energy are situated, or will be situated. A facility may contain more than one generator of either the same or different prime mover type. For a cogenerator, the facility includes the industrial or commercial process.

**Fast market**

Transactions in the ring that take place in such volume and with such rapidity that price reporters are behind with price quotations, so they insert 'Fast' and show a range of prices.

**Free On Board Mine Price (F.O.B. Mine Price)**

The price paid for coal at the mining operation site. It excludes freight or shipping and insurance costs.

**Federal Energy Regulatory Commission (FERC)**

- The US federal agency responsible for overseeing the wholesale energy market in the US and regulating interstate trade in electrical energy.
- Five-member commission was created as part of reorganisation of the US Department of Energy in 1977.
- Responsible for regulating prices, terms and conditions for the sale of energy between states and regions, and is works actively with the industry's transmission sector (the industry sector that transports energy from generating facilities to urban and rural markets).
- Presides over interstate trade in natural gas and management and operation of oil pipelines.

**Feebate**

- A marketing strategy that imposes fees on one type of customer to pay for rebates given to other customers.
- Used to encourage emissions reduction. When feebate schemes are used, fees are levied on polluters or polluting producers and returned to non-polluters or non-polluting producers. Feebates have been used to help stimulate the growth of green power production when technologies are new and implementation costs may be particularly high.

**FIN 46**

In January 2003, FASB issued FIN 46, Consolidation of Variable Interest Entities, which explains how to apply the controlling financial interest criterion in ARB 51 to variable interest entities. Variable interest entities include many entities that have been referred to as special-purpose entities as well as other entities that are structured in such a way that (a) the equity investment at risk is not sufficient to permit the entity to finance itself with subordinated financial support in other forms or (b) the equity investors as a group lack decision-making powers, do not absorb losses, or do not receive residual returns.

**Final day-ahead schedule**

Once an independent system operator's schedule for the next day's energy transmission has been checked with neighbouring ISOs, the result is called a final day-ahead schedule. ISOs have the power to schedule the management and use of the transmission grid or network under their control, but they must also arrange with other ISOs to guard against congestion and ensure coordinated, efficient delivery of energy for the following day.

**Financial attributes**

Financial attributes measure the financial health of the company. Utility management, security analysts, investors, and regulators use these attributes to evaluate a utility's performance against its historic records and industry averages. Key financial attributes include capital requirements, earnings per share of common equity, capitalisation ratios, and interest coverage ratios.

**Financial risk**

Monetary hazard associated with a given investment or business activity.

**Fire wall, firewall**

- A distinction that is made between two customer classes or subclasses as a way to ensure that any unique treatment given to one class is not applied to the other.
- Used to prevent residential customers from paying costs associated with serving industrial customers, and may also be used to prevent residential or commercial customers from receiving the same high-volume rates as industrial customers.
- Intended to have a neutral effect by ensuring that parties on both sides of the fire wall receive fair treatment.
- A software configuration scheme or specific software program that prevents some or all data from entering or leaving a given part of a network.
- A protective barrier designed to ensure that fires which may start in one area cannot easily spread to neighbouring areas. All automobiles made today have firewalls installed between the engine and passenger compartments.

**Firm capacity, firm energy, nonfirm energy, firm power**

- The amount of energy available for production or transmission that can be (and in many cases must be) guaranteed to be available at a given time. Firm energy refers to the actual energy guaranteed to be available. Nonfirm energy refers to all available energy above and beyond firm energy.
- Firm energy is often available at substantial discounts over nonfirm energy sold on the spot market. Energy producers such as hydroelectric plants and wind farms may have nonfirm energy available due to unexpected weather or seasonal conditions.
- The meaning of firm power depends on the context in which it is used, and may have different meanings to different parties. It can be synonymous with firm energy, mean capacity to provide firm energy, or both.

**Firm gas**

Gas sold on a continuous and generally long-term contract.

**Firm power**

Power or power-producing capacity intended to be available at all times during the period covered by a guaranteed commitment to deliver, even under adverse conditions.

**Firm transmission service**

Point-to-point transmission service that is reserved and/or scheduled for a term of one year or more and that is of the same priority as that of the Transmission Provider's firm use of the transmission system. Firm Transmission service that is reserved and/or scheduled for a term of less than one year shall be considered Short-Term Firm Transmission Service for the purposes of service liability.

**Fixed cost**

A production- or transmission-related expense that must be paid regardless of whether the energy is produced or sold. Fixed costs can include capital costs, labour and maintenance charges, taxes and demand charges among others.

**Fixed price**

A price that cannot or will not be changed.

**Flat rate**

- An electricity rate with one single component price that includes charges for all services related to energy provision.
- A flat rate for each kilowatt-hour of energy consumed, not a fixed price for an unlimited quantity of energy.

**Flexible rate**

An economic incentive rate designed to allow a utility to negotiate discounted costs with industrial or large commercial customers.

**Floor**

The main trading area of an exchange.

A supply contract between a buyer and seller of a commodity, whereby the seller is assured that he will receive at least some minimum price. This type of contract is analogous to a put option, which gives the holder the right to sell the underlying at a predetermined price.

**Force majeure**

A term or clause in a contract designed to protect a contracting party against uncontrollable events such as natural disasters, wars or climatic conditions that could prevent the fulfillment of some or all of the terms of the contract. When force majeure is invoked, the contracting party is essentially immune from any claims that customers might make in regard to losses that might result from inability to fulfill the terms of the contract. In the energy industry, force majeure is most frequently invoked to protect utilities from claims of damages that could follow a tornado, earthquake, military action or unanticipated legislative action.

**Forced outage**

A hardware failure at some point in the production, transmission, or distribution system that results in interruption of service. Forced outages usually occur due to unexpected component failure or systemic problems such as downed lines or lightning-induced overloads. These outages may or may not affect an end-use customer depending on where they occur. Regularly-scheduled shutdowns of equipment for routine maintenance do not qualify as forced outages.

**Forward**

A method used for trading commodities that will be delivered to the buyer at a specified time in the future.

Forwards differ from futures in that they are usually customised for the buyer, they are not traded on exchanges, and they may not be subject to the same regulations as futures.

**Forward buying**

- The acquisition of energy or related services in advance of need.
- Used primarily to ensure continuous, uninterrupted service by insuring future supplies of energy and availability of transmission access and other needed delivery services.

**Forward rate**

- An interest rate calculated on a loan to be granted in the future.
- Calculated using an equation that balances the current interest rate against projected interest rates, and the eventual rate may be subject to change at the time the loan is actually granted unless the rate is locked in some fashion.

**Forward start option**

An option that gives the purchaser the right to receive, after a specified time, a standard put or call option. The option's strike price is set at the time the option is activated rather than when it is purchased, and is usually set with reference to the prevailing spot rate when the option is activated.

**Forward swap**

A swap in which payments are fixed before the start date; used when one party expects market rates to rise soon, but will not need funds until later.

**Front office**

Responsible for trading at spot and forward markets (OTC and/or stock market).

**Fuel**

- Any substance that can be burned to produce heat.
- Materials that can be fissioned in a chain reaction to produce heat.

**Fuel adjustment, fuel adjustment charge, fuel adjustment clause**

A change made to the price of electricity or natural gas based on changes in the fuel's market price.

- **Fuel adjustments:** act as a form of protection against sharp rises or decreases in the cost of fuel, and they protect both the utility and the consumer. Where fuel adjustment policies apply, customer billings aren't usually adjusted for a period of one month to a year after a change is made.
- **Fuel adjustment charge:** is a surcharge added to compensate for increases, usually unanticipated, in the price of energy.
- **Fuel adjustment clause:** a term used in customer energy contracts that permits the utility to modify its energy rates to coincide with changes to the cost of energy to the utility. These clauses usually provide for price decreases as well as price increases.



**Fuel cost**

- The cost of the fuel's heat content.
- Calculated by dividing the total cost of the fuel by its BTU content (the amount of heat energy it can produce) and multiplying the result by one million.

**Fuel expenses**

Costs that include the fuel used in the production of steam or driving another prime mover for the generation of electricity. Other associated expenses include unloading the shipped fuel and all handling of the fuel up to the point where it enters the first bunker, hopper, bucket, tank, or holder in the boiler house structure.

**Fuel oil**

Heavy refined distillates. Used to fuel power stations and in ships and industry. The different fuel oil grades are classified according to their viscosity and sulphur content.

**Fundamental analysis**

To analyze supply and demand factors that could influence the direction of price of a commodity. For example, electricity traders who use fundamental analysis consider weather patterns, transmission constraints and unexpected power plant outages to consider the current demand for power and the amount of generation available in the region.

**Futures Commission Merchant (FCM)**

An FCM is the only industry participant who receives, handles, and manages customer funds, margin payments, and commission charges. He is also responsible for confirmation of trade slips, customer statements and guarantees.

**Futures contract**

When an agreement is made to acquire goods or services on the futures market, the buyer and seller enter into a futures contract. This contract assures the seller that the buyer will pay the agreed-upon price for a predetermined quantity of the commodity. In return, the buyer can lock in a price for the commodity regardless of the market price when the commodity is delivered.

Technically speaking, when a purchase is made on the futures market, the only thing bought or sold is the contract. Since the seller doesn't sell the commodity until the date on the contract, no actual commodity is sold under the contract until that date.

**Futures equivalent**

A term frequently used with reference to speculative position limits for options on futures contracts. The futures-equivalent of an options position is the number of options multiplied by the previous day's risk factor or delta for the options series. For example, 10 deep out-of-the money options with a risk factor of 0.20 would be considered two futures-equivalent contracts. The delta or risk factors used for this purpose is the same as that used in delta-based margining and risk analysis systems.

**Futures market**

A commodities market where delivery of not-yet-produced goods or services are purchased and sold using auction or stock-market-style bidding procedures.

**Gamma**

The sensitivity of an option's delta to changes in the price of the underlying futures contract.

**Gas**

A fuel burned under boilers and by internal combustion engines for electric generation. These include natural, manufactured, and waste gas.

**Gas nominations**

Nomination deadlines are where each pipeline has a scheduled deadline before which shippers must book gas for the following month.

**Gasoline**

A light-end hydrocarbon distillate used for internal combustion engines actively traded as futures and options contracts on the New York Mercantile Exchange.

**Gasoil**

European designation for No. 2 heating oil and diesel fuel.

**GDP**

Gross domestic product

**Generating unit**

The sum and total of all equipment necessary for production of electricity.

**Generation**

The act of producing energy, or the amount of energy produced. A facility's energy output is often referred to as its generation.

**Generation charges**

Part of the basic service charges on every customer's bill for producing electricity. Generation service is competitively priced and is not regulated by Public Utility Commissions. This charge depends on the terms of service between the customer and the supplier.

**Generation company (GENCO)**

- A regulated or non-regulated company engaged solely in producing electricity.
- A company that generates energy.

**Generation mix**

The diversity of generating units used to produce electricity.

**Generation scheduling**

The planning and arranging of energy production. Schedules are usually drawn up in one-hour increments, but the increased sophistication of modern energy management systems allows production to be scheduled down to the minute if needed.

**Geothermal energy**

Heat (thermal) energy stored in rock below the Earth's surface.

**Gigawatt (GW)**

One billion watts.

**Gigawatthour (GWh)**

One billion watthours.

**Good-till-the-Close (GTC)**

An order given to a futures broker that stays live until filled, or until the close of the market, whichever is sooner.

**Green power**

Any type of energy that is considered to have a lower environmental impact than commercially-produced energy.

**Greenhouse effect**

The idea that certain gases in the atmosphere trap heat like the glass in a greenhouse was first proposed over one hundred years ago, and is now widely accepted. About half the sun's energy reaching the earth is reflected back into space or absorbed by the upper atmosphere. The other half is absorbed by the earth's surface. Some of this energy is then radiated upwards where a portion is trapped in the atmosphere warming the Earth. The rest goes out into space. The greenhouse gases, primarily carbon dioxide and methane, control the balance between the trapped and radiated energy.

**Greenhouse gases**

A collection of gaseous substances, primarily consisting of carbon dioxide, methane and nitrogen oxides, which have been shown to warm the earth's atmosphere by trapping solar radiation.

Greenhouse gases include chlorofluorocarbons (CFCs), a group of chemicals used primarily in cooling systems and which are now either outlawed or severely restricted by most industrialised nations.

**Grid**

The layout of an electrical distribution system.

**Grid operations charge**

A tariff or rate schedule approved by the Federal Energy Regulatory Commission that lists customer charges and user fees levied for use of a grid. These charges cover the ongoing costs of construction, operation and maintenance of the energy grid. These charges are usually applied as charges included on wholesale energy bills and are paid out to independent system operators to cover their operating costs.

**Grid, power grid, transmission grid**

A system of interconnected generating facilities, transmission corridors and power lines that provide energy to a group of customers.

**Gross Domestic Product (GDP)**

The total value of goods and services produced by labour and property in the United States.

**Head and shoulders**

A three-peak pattern resembling the head and shoulders outline of a person, which is used to chart stock and commodity price trends. The pattern indicates the reversal of a trend. As prices move down to the right shoulder, a head and shoulders top is formed, meaning that prices should be falling. A reverse head and shoulders pattern has the head at the bottom of the chart, meaning the price should be rising.

**Heat rate**

A measurement used in the energy industry to calculate how efficiently a generator uses heat energy. It is expressed as the number of BTUs of heat required to produce a kilowatt-hour of energy. Operators of generating facilities can make reasonably accurate estimates of the amount of heat energy of a given quantity of any type of fuel, so when this is compared to the actual energy produced by the generator, the resulting figure tells how efficiently the generator converts that fuel into electrical energy.

**Heavy oil**

The fuel oils remaining after the lighter oils have been distilled off during the refining process. Except for start-up and flame stabilization, virtually all petroleum used in steam plants is heavy oil.

**Hedging contract**

A type of contract used to establish a predetermined price that will be paid for a given amount of electricity regardless of what the actual market value of that energy might be at the time it is delivered to the customer. This type of contract provides the purchaser with the certainty of a fixed price for the commodity and ensures a guaranteed sale price for the seller.

**Hedge accounting**

The practice of deferring gains and losses on financial market hedges until the corresponding gain or loss in the underlying exposure is recognised.

Allows companies to incorporate the cost of hedging into the cost of the exposure. Gains are thereby offset against losses. This reduces the volatility of earnings.

**Hedge ratio**

The ratio, determined by the option's delta, of futures to options required to establish a position that involves no price risk.

**Henry Hub**

The delivery point for the largest NYMEX natural gas contract by volume. Henry Hub is in Erath, Louisiana, and is a large system of pipeline interconnects.

**Historical simulation**

A method of calculating value-at-risk, which uses historical data to assess the impact of market moves on a portfolio. A current portfolio is subjected to historically recorded market movements; this is used to generate a distribution of returns on the portfolio. This distribution can then be used to calculate the maximum loss with a given likelihood – ie, the value-at-risk. Because historical simulation uses real data, it can capture unexpected events and correlations that would not necessarily be predicted by a theoretical model.

**Historical volatility**

The annualised standard deviation of percentage changes in futures prices over a specific period. It is an indication of past volatility in the marketplace.

**Holding company**

A company that owns (holds) the assets of another company but operates as a distinct and usually autonomous corporate entity, complete with its own board of directors.

**Home Energy Rating Systems (HERS)**

A nationally recognised energy rating program that gives builders, mortgage lenders, secondary lending markets, homeowners, sellers, and buyers a precise evaluation of energy-losing deficiencies in homes. Builders can use this system to gauge the energy quality in their home, and also to have a star rating on their home to compare to other similarly built homes.

**Hour-ahead market**

As the term implies, the market for the electrical energy that can be delivered to the customer for use in the next hour.

**Hourly non-firm transmission service**

Point-to-point transmission that is scheduled and paid for on an as-available basis and is subject to interruption.

**Houston Ship Channel**

Located in east Texas, this is a major US oil refinery centre. It is also a pricing and major market point for gas in the US.

**IAS 32/ IAS 39/ IFRS 7**

Specific standards among the IFRS (International Financial Reporting Standards) dealing with the accounting of financial instruments and its impact on disclosures regarding commodity trading.

**Iceberg order**

Buy or sell order which is specified by means of its limit, total quantity and peak quantity. The Iceberg Order is placed in the order book in partial orders to the amount of the peak quantity. As soon as a partial order has been executed, a new partial order to the amount of the peak quantity is placed in the order book. This process is repeated until the total quantity of the Iceberg Order is executed.

**ICP**

Intercompany Pool

**Imbalance energy**

The difference between hourly scheduled electricity deliveries and hourly metered deliveries. Typically, energy imbalances are eliminated during a future period by returning energy in kind under conditions similar to those when the initial energy was delivered. When energy imbalances exceed a pre-specified threshold (eg, +/- 1.5% of the scheduled transaction), imbalances are resolved through monetary payments.

**Implicit price deflator**

Used to convert nominal figures to real figures.

Published by the US Department of Commerce, Bureau of Economic Analysis.

**Implied volatility**

A measurement based on the premiums of market traded options of the expected price range of the underlying commodity.

**Incremental cost**

The cost of the next kilowatt-hour of generated energy, also referred to in the industry as the next unit.



**Independent grid operator (IGO)**

- The party responsible for maintaining balance in a power grid.
- Grid operators control energy transmission systems and switching networks to ensure adequate energy flow in the grid by preventing excessive transmission or inconvenient reductions in current flow.
- Charged with maintaining the reliability of the grid.

Independent power producer (IPP), non-utility generator (NUG).

A producer of electrical energy which is not a public utility but which makes electric energy available for sale to utilities or the general public.

**Independent power producer (IPP), non-utility generator (NUG)**

A producer of electrical energy which is not a public utility but which makes electric energy available for sale to utilities or the general public.

**Independent system planner (ISP)**

An organisation assigned to tasks including evaluation of proposed rate increases, plant construction and other activities relating to market health and public interest.

**Independent system operator (ISO)**

Entity responsible for ensuring the efficient use and reliable operation of the transmission grid and, in some cases, generation facilities. ISO responsibilities vary by jurisdiction, but can include coordinating scheduling for transmission transactions, overseeing the instantaneous balancing of generation and load, managing and re-dispatching generation in system emergencies, managing operating reserves, ensuring that new transmission facilities are built when and where they are needed, and coordinating transmission payments. In some cases, ISOs are also responsible for managing power exchange activities.

**Industrial customer**

A consumer of energy for purposes of industry, usually manufacturing.

**Integrated hedge**

A hedge that combines more than one distinct price risk. For example, crude oil is usually priced in US dollars. A producer of crude oil whose home currency is the Deutschmark would be exposed to both US dollar currency risk and crude oil price risk. A possible integrated hedge would be a quanto product, which would hedge the price of crude oil in Euros.

### Integrated resource planning (IRP), least-cost planning

A planning method that takes into account all resources available to or required for a given enterprise or activity. 'All resources' includes both those owned and controlled by the firm or entity doing the planning, and any additional resources that can be outsourced from other providers.

The objective of IRP is to determine the mix of owned/controlled and outsourceable resources that produce to the lowest possible costs. In energy planning, one of the resources used in the process is the input of the general public into the planning process, and in many cases costs include externalities, which are costs borne by the environment or the general public that are not the direct responsibility of an energy producer.

### Interchange

Energy that is sold by one utility to another is referred to as interchange. Interconnections, interconnects

Points on a grid or network where two or more transmission lines join or cross, or where one stage of the energy supply chain meets the next. An interconnection can occur where a generating facility meets transmission facilities, where high-voltage energy transmission corridors cross, or where a utility's distribution facilities connect with the transmission grid. These points can usually be switched or controlled to allow one line to receive more energy than another, or to transfer all energy on to one or more of the connecting lines.

### Interdelivery spread

Futures or options trading techniques that entail buying one month of a contract and selling another month of the same contract – for instance, buying a June electricity contract and simultaneously selling a September electricity contract. A market participant can profit (or lose out) as the price difference between the two contracts widens or narrows.

### Interest expense

The total of all interest owing on a utility's debts for a given period of time; the total cost of interest charges for that period as an operating expense.

### Intermittent resources

Resources whose output depends on some other factor that cannot be controlled by the utility, eg, wind or sun. Thus, the capacity varies by day and by hour.

### Internal rate of return (IRR)

A widely used rate of return for performing economic analysis. This method solves for the interest rate that equates the equivalent worth of an alternative's cash receipts or savings to the equivalent worth of cash expenditures, including investments. The resultant interest rate is termed the internal rate of return (IRR).

### Interruptible energy, interruptible service, interruptible demand, interruptible rate

Flow that can be reduced or completely stopped with little or no notice.

- **Interruptible energy:** A type of electrical service sold to firms that might only be able to operate profitably when energy prices remain below a certain level. When interruptible energy is purchased, the purchaser voluntarily assumes the risk of loss of access to that energy, which usually occurs only during peak demand periods or during periods when market prices rise above the agreed-upon rate. Commercial, industrial and agricultural customers tend to be the first affected by this type of interruption.
- **Interruptible rate:** The agreed-upon rate for energy sold as interruptible.

### Interruptible gas

Gas sold to customers with a provision that permits curtailment or cessation of service at the discretion of the distributing company under certain circumstances, as specified in the service contract.

### Interruptible load

Program activities that, in accordance with contractual arrangements, can interrupt consumer load at times of seasonal peak load by direct control of the utility system operator or by action of the consumer at the direct request of the system operator. It usually involves commercial and industrial consumers.

### In-the money

An option that can be exercised and immediately closed out against the underlying market for a cash credit. The option is in-the-money if the underlying futures price is above a call option's strike price, or below a put option's strike price.

### **Intrinsic value**

The amount by which an option is in-the-money. An option that is not in-the-money has no intrinsic value.

For calls, intrinsic value equals the difference between the underlying futures price and the option's strike price. For puts, intrinsic value equals the option's strike price minus the underlying futures price. Intrinsic value is never less than zero.

### **Introducing broker**

A firm engaged in soliciting or in accepting orders for the purchase or sale of any commodity for future delivery.

### **Inverted block rate**

A fee structure for energy in which each additional block or unit of energy above a given level is charged at a higher rate than preceding blocks. Most commonly applied to energy delivered to clients who require large portions of their energy during peak demand periods when energy costs are typically higher, or when additional system capacity has to be brought online to meet that client's needs.

### **Inverted market**

A futures market is said to be inverted when distant contract months are selling at a discount to nearby contract months; also known as backwardation.

### **Investor-owned utility (IOU), private utility, private power company**

A utility owned by private investors, as opposed to one owned by a public trust or agency.

A commercial, for-profit utility as opposed to a co-op or municipal utility.

**ISDA master agreement**

The International Swaps and Derivatives Association (ISDA) over-the-counter derivatives master agreement was drawn up by the New York-based trade association in 1987 and revised in 1992.

The agreement is commonly used for contracts in various energy derivatives markets, especially the US gas market.

**ISO control area**

The geographical region, including its transmission facilities, which is managed by an independent system operator.

**ISO transmission grid, ISO grid**

The network and facilities controlled by an individual independent system operator.

**Kilowatt (kW)**

One thousand watts.

**Kilowatt demand**

A measure of average load over a given period expressed in kilowatts. This measurement is used by utilities and wholesalers to determine a customer's average requirement.

**Kilowatt-hour**

- A quantitative measure of electric current flow equivalent to one thousand watts being used continuously for a period on one hour; the unit most commonly used to measure electrical energy, as opposed to kilowatt, which is simply a measure of available power.
- Customer billings for all but the largest consumers are usually based in part or in total on the number of kilowatt-hours of electricity used. The standard unit of current flow used in physics is the joule, but since a joule is only equivalent to one watt-second, kilowatt-hour has become a much more convenient standard.
- A kilowatt-hour of energy typically costs between two and 20 cents depending on where and when it is purchased and by whom. This much energy will operate a 40-watt lightbulb for a full day, a 19" colour television for about four hours, a personal computer for 2 and-a-half hours, an electric hairdryer for 30 to 60 minutes, an electric razor for 36 hours, a clothes dryer for 15 minutes, a microfurnace heater for 40 minutes, a clock radio for up to several days, a portable stereo for as long as a week, and a telephone answering machine for as long as a month.
- The kilowatt-hour is the base unit for nearly all measurements of energy volume both inside and outside the energy industry, although other values are occasionally used.

**Kilowatt-hours per capita**

A measurement of average per-person energy generation for a given region. The number of kilowatt-hours of energy produced, not the number consumed, is divided by the total population of the region to arrive at this figure.

**Kyoto Protocol**

The Kyoto Protocol was agreed by all countries under the UN Framework Convention on Climate Change in Kyoto, Japan, in December 1997. The Protocol requires industrialised countries to meet differentiated greenhouse gas emissions reduction targets relative to 1990 levels during the period 2008-12. It has been ratified by 177 countries, including all industrialised countries, with the exception of the United States of America. The Protocol establishes the framework for international emissions trading as well as the Clean Development Mechanism which aims to incentivise clean investment in developing countries.

**Landed price**

The actual delivered cost of oil to a refiner, taking into account all costs from production or purchase to the refinery.

**Lambda**

1. The rate at which fuel is converted to energy.
2. Represented by the ratio of heat energy consumed to electrical energy produced, and expressed as BTUs per kilowatt-hour.

**Last notice day**

The final day on which notices of intent to deliver on futures contracts may be issued.

**Least-cost alternatives**

The lowest-priced substitute for a given commodity.

**Least-cost resource mix**

The blend of energy sources and efficiency measures that produce the lowest total cost for delivering energy to end-use customers.

**Letter of credit**

Instrument or document issued by a bank guaranteeing the payment of a customer's drafts up to a stated amount for a specified period. It substitutes the bank's credit for the buyer's and eliminates the seller's risk.

**Leverage**

The ability to control large amounts of an underlying variable for a small initial investment. Futures and options are leveraged products because the initial premium paid is usually much smaller than the nominal amount of the underlying. Leverage is usually measured as the effective gearing.

**Leverage ratio**

A measure that indicates the financial ability to meet debt service requirements and increase the value of the investment to the stockholders (ie, the ratio of total debt to total assets).

**Liability**

An amount payable in dollars or by future services to be rendered.

**Light oil**

Lighter fuel oils distilled off during the refining process. Virtually all petroleum used in internal combustion and gas turbine engines is light oil.

**Limit order**

A contingent order for an options or futures trade specifying a certain maximum (or minimum) price, beyond which the order (buy or sell) is not to be executed.

**Line loss**

Energy waste resulting from the transmission of electrical energy across power lines; usually refers to losses within transmission systems but occasionally refers to the same losses when they occur in distribution systems. These losses occur due to the conversion of electricity to heat and electromagnetic energy. A small amount of loss occurs even in the most efficiently engineered systems.

**Liquidated damages clause**

The clause allows a counterparty that is owed power to charge the defaulting counterparty for the price of having to buy elsewhere. The higher the price the higher the charge, when a company defaults on its supply obligations.

**Liquidation**

The closing out of futures and options positions.

**Liquidity risk**

The risk that a firm unwinding a portfolio of illiquid instruments may have to sell them at less than their fair value. An illiquid market may be defined as one characterised by wide bid/ask spreads, lack of transparency and large movements in price after any sizeable deal.

**Liquefied natural gas (LNG)**

Natural gas (mainly methane) that has been liquefied for ease of storage and transportation. The gas is liquefied either by reducing the temperature or by increasing pressure.

**Liquefied petroleum gas (LPG)**

A light hydrocarbon composed mainly of propane and butane, occurring naturally in crude or from refining processes such as crude distillation, catalytic reforming or hydro-cracking. Gaseous at atmospheric pressure and temperature, LPGs are liquefied by reducing temperature or increasing pressure for ease of transportation and storage.



**Load**

- The amount of power delivered (or deliverable) along the entire circuit or between specific points on the system.
- The moment-to-moment measurement of power requirement in the entire system.
- The amount of electric power delivered or required at any specific point or points on a system. The requirement originates at the consumers' energy-consuming equipment.

**Load curve**

The distribution of power requirements over time. When plotted on a graph, time usually depicted as the horizontal axis and load as the vertical axis.

**Load factor**

A measure of the average load, in kilowatts, supplied during a given period. It is used to determine the total amount of energy that would have been used if a given customer's maximum load was sustained over an extended period of time. This value offers a useful comparison to show what percentage of a customer's potential usage is actually used.

Load factor is a fairly complex calculation that is derived this way: (kWh of energy used x 100) / (maximum kilowatt demand x hours in the measured period).

**Load following**

A utility's practice of adding additional generation to available energy supplies to meet moment-to-moment demand in the distribution system served by the utility, and/or keeping generating facilities informed of load requirements to ensure that generators are producing neither too little nor too much energy to supply the utility's customers.

**Load growth**

Increase in energy demand, either through natural growth of a service territory resulting from increased prosperity, productivity or population growth, or through stimulation of the energy market.

**Load management**

The process of structuring and/or scheduling the use of energy among a group of customers to best match available supplies to available demand.

**Load profile**

The energy usage pattern of a customer who does not use meters capable of measuring short-term usage is referred to as the customer's load profile.

**Load shape**

The distribution of energy requirements over time. Derived from the practice of plotting energy requirements on a chart or graph, which produces a graph whose curve usually has a distinctive shape. When distribution of energy requirements is changed, the shape of the graph also changes, so the redistribution of demand or load is referred to as changing the load shape.

**Load shedding**

Blocking of customer access to energy, usually due to temporary shortage of supply.

**Load shifting**

The practice of altering the pattern of energy use so that on-peak energy use is shifted to off-peak periods. Load shifting is a fundamental demand-side management objective.

**Local distribution companies (LDC)**

The transmission and/or distribution company responsible for getting energy from the producer to a local utility or directly to the consumer.

**Long the basis**

A person or firm that has bought the spot commodity and hedged with a sale of futures is said to be long the basis.

**Lookback option**

Grants the right to buy (sell) the underlying energy commodity at the lowest (highest) price reached during the life of the option. Effectively, the best price from the point of view of the holder becomes the strike price.

**Loss**

The loss of real energy or loss of capacity to transmit energy in an electrical system. The most common form of energy loss in electrical generation and transmission systems is loss through heat.

**Lot**

The unit size for transactions on a given futures exchange.

### Margin

The amount of money or collateral deposited by a customer with his broker, or deposited by a broker with a clearing member, or by a clearing member with the clearinghouse, for the purpose of insuring the broker or clearinghouse against adverse price movement on open futures contracts. The margin is not partial payment on a purchase.

- 1) Initial margin is the minimum deposit per contract required by the broker when a futures position is opened.
- 2) Variation margin (maintenance margin) is a sum that must be maintained on deposit at all times. If the equity in a customers' account drops to, or under, that level because of an adverse price movement, the broker must issue a margin call to restore the customers' equity. Margins are set by the Exchange, based on its analysis of price risk volatility in the market at that time.

### Marginal cost, long-run marginal cost

- The cost of providing an additional kilowatt-hour of energy output over and above any energy currently being produced.
- The next kilowatt-hour or next unit as the basis for determining this cost.
- Only includes immediate expenses required to produce more energy.
- Long-run marginal cost includes capital costs and embedded costs, which are not included in marginal costs.
- Used interchangeably with incremental cost, but marginal cost can be applied to the average next-unit cost for a large number of additional units, whereas incremental cost applies strictly to the next unit, not to any average of multiple next-units.

**Market clearing price, locational market clearing price**

- The top price that can normally be expected for a product.
- The price for a given commodity that ensures that all available supply is sold and all available demand is met.
- Can be used interchangeably with locational market clearing price in most areas of the energy industry.

**Market-if-touched order**

An order that becomes a market order when a particular price is reached. A sell MIT is placed above the market; a buy MIT is placed below the market.

**Market maker**

An energy trader or energy trading firm that is prepared to buy and sell in the cash or derivatives market to provide a two-sided (bid/ask) market and greater liquidity.

**Market on close**

An order to buy or sell a specified amount of futures contracts at the price when the market closes.

**Market participant**

Any party involved as a buyer or seller of energy in the energy market.

**Market power**

A given party's ability to manipulate some or all aspects of a market's behaviour. Market power can consist of ability to control price, demand, supply and/or delivery, and can be exerted through ownership of a critical level of any portion of the supply chain or through the ability to purchase or consume a critical level of supply.

**Market price, market-based rate**

A price for a commodity that is usually mutually determined by the buyer and seller based on prevailing conditions in a competitive marketplace. Occasionally used interchangeably with free-market price. In the energy industry, the market on which this type of price is based is usually the energy spot market.

**Market risk**

The risk that value will be lost due to a change in some market variable, such as commodity or equity prices, interest rates or foreign exchange rates. The market risk of a derivatives position may arise from a change in the value of the underlying or from other sources such as implied volatility or time decay (theta).

**Marked-to-market**

To calculate the value of a financial instrument (or portfolio of such instruments) at current market rates or prices of the underlying. Marking-to-market on a daily (or more frequent) basis is often recommended in risk management guidelines.

**Marketer**

- An agent or facilitator who acts as an intermediary on behalf of energy producers by finding and selling to energy consumers. Alternately, marketers may sell to any party in the supply chain who is downstream from the producer.
- Marketers assume title to the commodity they trade either by purchasing the commodity or by acting on the producer's behalf. They earn their profit based on a markup added to the product's price when it is sold to a customer. In contrast, a broker never assumes title to the energy they are selling and they might transact business on behalf of the seller, the buyer, or both parties. Marketers and brokers may also assist the customer with aggregation, firming and arrangement of ancillary services.
- Energy marketers are frequently regulated at the state level and must always be certified by the Federal Energy Regulatory Commission. Marketers must be able to prove that they cannot or will not undertake any activity that could result in interruption of power transmission, and they are not permitted to act in a way that places pressure on energy markets that could adversely affect consumer prices.

**Marketing cost**

Expenses directly associated with the preparation and implementation of the strategies designed to encourage participation in a DSM program. The category excludes general market and load research costs.

**Maximum demand**

The greatest of all demands of the load that has occurred within a specified period of time.

**Mcf**

One thousand cubic feet.

**Mean reversion**

The process under which prices constantly revert over time to an equilibrium level.

**Megawatt (MW)**

One million watts.

**Megawatthour (MWh)**

One million watt-hours.

**Member system**

An Eligible Customer operating as a part of a lawful combination, partnership, association, or joint action agency composed exclusively of Eligible Customers.

**Middle Office**

In charge of market analysis, forecasts and the valuation of trades at current market prices.

**Minimum generation**

The lowest level of production that a generating unit can maintain before it ceases to be cost-effective to keep online.

**MMBtu**

One million British thermal units, one dekatherm. Approximately equal to a thousand cubic feet (Mcf) of natural gas.

**MMcf**

One million cubic feet.

**Monopoly**

When only one supplier, provider or seller is available for a given commodity in a given market, that individual or entity is referred to as a monopoly, and has monopoly control over that market.

**Monopsony**

When only one buyer is available for a given commodity.

**Monte Carlo simulation**

- A method of pricing derivatives by simulating the evolution of the underlying variable (or variables) many times over. The average outcome of the simulation is an approximation of the derivative's value.
- Useful in the valuation of complex derivatives for which exact analytical solutions have not been found, but it can be very computationally intensive.
- Can be applied to a portfolio of instruments, rather than a single instrument, to estimate the portfolio's value-at-risk.

**Moving average**

The average of commodity prices constructed for a period as short as a few days or as long as several years, which shows trends for the latest interval. For example, a 30-day moving average includes yesterday's figures; tomorrow the same average will include today's figures and will no longer show those for the earliest date included in yesterday's average. Every day it records figures for the latest day and drops those for the earliest day.

**Moving strike option**

Any option whose strike is reset over time.

**Multi-factor model**

Any model in which there are two or more uncertain parameters in the option price (one-factor models incorporate only one cause of uncertainty: the future price). Such models can be more realistic than one-factor models, particularly in modeling complex variables such as interest rates. Other problems, such as modeling spread options, automatically require a multi-factor model.

**Multi-factor option**

Any option, such as a spread option, whose payout is linked to the performance of more than one asset. Their value is usually strongly dependent on the correlation between underlying assets.

**Municipal utility (muni)**

- When the utility provider for a given city or municipal region is owned by the city or region itself, it is referred to as a municipal utility. A muni is a type of public utility. Regulation is usually controlled by a civic agency, usually a public utilities commission.
- Most munis are self-regulating and not subject to state regulations.
- They can raise capital for construction and maintenance using tax-exempt bond issues, set their own rate schedules and policies provided they fall within state and federal regulations, and optionally choose how and when they wish to deregulate themselves.
- Once a muni is deregulated, it becomes subject to the same federal and state regulations as any privately-held utility. Munis can be directly owned by a municipality or function as self-governing bodies organised as separate public corporations with a degree of independence from the municipality.

**Must-take resources**

Resources that must be taken by the customer regardless of market prices or conditions. These are energy resources that have to be acquired and consumed before any other resources are made available. Depending on the jurisdiction and the client, must-take resources may include co-generated energy from qualifying facilities, nuclear or hydroelectric energy, renewable energy from solar, wind or tidal generators, and energy already arranged through pre-existing contracts.

**MW**

Megawatt



**Naked option**

An option that is purchased or sold without an offsetting position in the underlying.

**Naphtha**

A volatile, colourless product of petroleum distillation. Used primarily as a paint solvent, cleaning fluid, and blendstock in gasoline production.

**National Futures Association**

Futures industry trade association that promulgates rules of conduct and mediates disputes between customers and brokers.

**Native load**

The cumulative load (power requirement) of a utility's retail customer base.

**Native load customers**

The wholesale and retail customers on whose behalf the Transmission Provider, by statute, franchise, regulatory requirements, or contract, has undertaken an obligation to construct and operate the Transmission Provider's system to meet the reliable electric needs of such customers.

**Natural gas**

A mixture of several combustible gases, which is found with most petroleum (oil) and tar deposits and some coal seams. Natural gas consists primarily of methane, but it can also include varying proportions of propane, butane, ethane and other combustible gases.

**Natural gas (dry)**

The marketable portion of natural gas production, which is obtained by subtracting extraction losses, including natural gas liquids removed at natural gas processing plants, from total production.

**Natural gas liquids**

Liquids produced along with natural gas. They consist mainly of propane, butane, natural gasoline and condensate.

**Natural hedge**

The reduction in risk that can arise from an institution's normal operating procedures. A company that has significant sales in one country holds a natural hedge to its currency risk if it also generates expenses in that currency. For example, an oil producer with refining operations in the US is (partially) naturally hedged against the cost of dollar-denominated crude oil. While a company can alter its operational behaviour to take advantage of a natural hedge, such hedges are less flexible than financial hedges.

**Natural monopoly**

A market that may appear to be competitive but includes one competitor who can produce a better product or offer a lower price than all other competitors combined.

**Net position**

The difference between the entity's open long contracts and open short positions in any one commodity.

**Net present value**

A technique for assessing the worth of future payments by looking at the present value of those future cashflows discounted at today's cost of capital.

**Network**

- A cross-connected, multiple-access web of transmission and distribution lines, usually used in urban areas, which provides power to large numbers of customers and includes sufficient interconnection points to allow rapid rerouting of energy when demand or emergency conditions require it.
- Regional or municipal distribution infrastructure; grid is more commonly applied to high-voltage transmission systems that feed these distribution systems.

**Network customers**

Entities receiving transmission service pursuant to the terms of the Transmission Provider's Network Integration Tariff.

**Network Integration Transmission Service**

Allows a Transmission Customer to integrate, plan, economically dispatch, and regulate its Network Resources to serve its Network Load in a manner comparable to that in which the Transmission Provider utilises its Transmission System to serve its Native Load customers. Network Integration Transmission Service also may be used by the Transmission Customer to deliver non-firm energy purchases to its Network Load without additional charge.

**Network load**

The designated load of a Transmission Customer.

**New York Mercantile Exchange (NYMEX)**

The world's largest physical commodity exchange, consisting of two divisions: the NYMEX Division and the COMEX Division. Along with metals futures and options, the Exchange offers trading for energy futures and options in crude oil, heating oil, gasoline, natural gas and electricity, as well as propane futures and options on the crude oil/gasoline and crude oil/heating oil crack spreads. NYMEX is responsible for over 80% of the world's energy futures and options trading.

**Next-day system requirement**

Generating capacity that is left online after the day's peak demand period ends so that it is available to meet the following day's demand. Next-day system requirement is calculated as a percentage of system swing load (the difference between peak and baseload demands on a given day).

**No-load loss**

Energy losses resulting from a system that is powered but not in use.

**Nominal cost, nominal dollars**

The cost of energy production based on actual cost at a particular time, not accounting for inflation or any other adjustments.

**Nominal price**

The price paid for a product or service at the time of the transaction. The nominal price, which is expressed in current dollars, is not adjusted to remove the effect of changes in the purchasing power of the dollar.

**Nomination**

The notification to put into effect a contract or part of a contract, eg, a gas flow nomination from a shipper to advise the pipeline owner of the amount of gas it wishes to transport or hold in storage on a given day.

**Nomination deadlines**

The deadline for nominations for gas supply, transportation and storage volumes given to the pipeline owner for a full month in the last week of the previous month. This happens around the expiry of the futures contract on the New York Mercantile Exchange, the actual day varying between pipelines.

**Non-firm power**

Power or power-producing capacity supplied or available under a commitment having limited or no assured availability.

**Non-firm purchase**

- The purchase of any commodity on an as-available basis.
- Spot market purchases of available energy that is not likely to be required by other customers who may have arranged for production at that particular time. Once the purchase is made, the seller cannot arbitrarily make that energy available to another customer who is willing to pay a higher price, but the buyer may not always be able to buy energy in this fashion.

**Non-firm transmission service**

- Point-to-point transmission service that is reserved and/or scheduled on an as-available basis and is subject to interruption.
- Available on a stand-alone basis as either hourly non-firm transmission service or short-term non-firm transmission service.

**Non-ISO transmission facilities**

Transmission infrastructure that is owned or operated by a private company or organisation that does not employ or contract an independent system operator to manage the facilities.

**Notional value**

The underlying principal value of either an exchange-traded or over-the-counter transaction.

**Notional path**

Usually the shortest route along which gas would travel from entry point to exit point.



## O&M

Operation and maintenance

## Obligation to serve

The requirement that a utility provide electric service to any customer who wants that service and has the means to pay for it. In some cases, it extends to include customers who need that service but are unable to pay for it. Traditionally, utilities operating as regional monopolies have been placed under an obligation to serve as a means of insuring universal access to essential services. Where this obligation is imposed by regulation or a negotiated agreement, it is usually accompanied by an additional obligation to make a suitable quantity and quality of energy available to its customers. Obligation to serve is not a universally-applied concept; not all customers in deregulated markets may be entitled to receive the service they received under regulation, and in fact customers in some regions may not be entitled to any type or quality service.

## Offline, online

- Offline capacity: Any energy production capacity that is not currently in use.
- Online capacity: The generating capacity currently in use. Any generating unit, transmission line or part of a distribution network that is transmitting energy, or can transmit energy on demand, is online. It is offline if it is not actually providing energy for end-use customers, and this applies to generating units that may be producing energy but that are not sending that energy to actual customers.

## Off-peak

Times of relatively low energy demand, typically nights and weekends.

## Offset

A transaction that liquidates or closes out an open contract position. In spread positions, one side offsets the other without liquidating the entire position. Risk is reduced when one side offsets the other.

## Oligopoly

A small group of suppliers, providers or sellers who have the ability to control market prices for a given commodity if they should ever decide to work together for that purpose.

**One cancels the other**

Where a broker is given two alternative orders. As soon as one is executed, the other order is cancelled.

**On peak**

Refers to hours of the business day when demand is at its peak. In the US physical market, on-peak definitions vary by North American Electric Reliability Council region.

**Organisation of the Petroleum Exporting Countries (OPEC)**

OPEC members are Algeria, Indonesia, Iran, Iraq, Kuwait, Libya, Nigeria, Qatar, Saudi Arabia, Venezuela, and UAE. OPEC member states have two regular meetings a year, but may call further meetings if crude oil prices are low. At these meetings they may review both individual and group production quotas. Although not the dominant force it was in the late 1970s, because of the increase in production by non-OPEC countries, OPEC continues to control marginal supply in a world oversupplied with crude oil.

**Open access**

- When an energy customer can use one party's transmission systems to receive energy from another party, that customer is said to have open access to the transmission system.
- Prevents a utility that owns or controls a region's transmission and distribution systems from also controlling the energy supply.
- Differs from direct access in that direct access refers to acquisition of actual energy, whereas open access refers only to access to transmission systems used to transport it.

**Open Access Same-Time Information System (OASIS),  
Real-Time Information Network**

An Internet bulletin board created by the Federal Energy Regulatory Commission to give energy marketers, utilities and other wholesale energy customers real-time access to reserve capacity on the US electrical transmission grids.

Formerly referred to as the Real-Time Information Network.

**Open interest**

The number of outstanding obligations on an exchange-traded contract, usually a good indicator of commercial interest. There will always be an equal number of outstanding buy and sell obligations, since these commitments represent completed deals.



### Operating expenses

- Day-to-day costs of doing business.
- Primarily of labour costs and costs for fuel used in energy production. Operating costs do not include interest and debt payments; these are considered to be fixed costs.

### Operating reserve

The North American Electric Reliability Council and regional grid management councils require that a specific level of reserve power (spinning and non-spinning) be available at all times to ensure reliable grid operation. A grid's operating reserve consists of all reserves available to serve customers connected to that grid.

### Operational risk

The risk that a firm's internal practices, policies and systems are not adequate to prevent a loss being incurred, either because of market conditions or operational difficulties. Such deficiencies may arise from failure to measure or report risk correctly, or from a lack of controls over trading staff. Although operational risk is harder to define precisely than market or credit risk, it is considered by many to have been a contributor to some of the highly publicised losses of recent years.

### Opt out

The right of individual retail customers to choose not to acquire energy from an aggregator, co-op or utility that is able to serve them. Customers can only opt out if another party is ready and able to provide them with energy.

### Options

A type of contract that gives one party the right to buy something at a given time in the future from a particular seller.

Options contracts do not imply a sale. Instead they imply a possible sale by granting the potential buyer the option to choose whether or not they wish to purchase the commodity. The buyer never has to make the actual purchase. Typically, the option sets a fixed price for the commodity and a fixed or final date for purchase. If the owner of options can purchase the actual commodity at that price on or before the associated date at a price that is favourable to them, they will probably exercise the option and make the purchase. If the price is too high at that time, they can choose not to exercise the option, and the contract expires.

**Outage**

Any interruption of current flow in a transmission or distribution system. Can occur in transmission systems without affecting end-use customers. Energy grids are designed to allow energy to be routed around areas affected by outages to ensure uninterrupted service to end-use customers.

**Out-of-the-money**

An option that has no intrinsic value. For calls, an option that has an exercise price above the market price of the underlying future. For puts, an option that has an exercise price below the futures price. The opposite is in-the-money.

**Own-use exemption**

Commodity forward contracts fulfilling all criteria of derivatives for which the own-use exemption applies are not in the scope of IAS 39.

**Over-the-counter (OTC)**

A deal that is a customised derivative contract, usually arranged with an intermediary such as a major bank or the trading wing of an energy major, as opposed to a standardised derivative contract traded on an exchange.



**Paper market**

A market for contracts where delivery is settled in cash, rather than by delivery of the physical product on which the contract is based.

**Path-dependent option**

A path-dependent option has a payout dependent on the price history of the underlying over all or part of the option's life. The commonest form of option in over-the-counter energy risk management (the Asian option) is a path-dependent option, as are lookback and barrier options.

**Payback**

The length of time it takes for the savings received to cover the cost of implementing the technology.

**Peak demand**

The maximum load during a specified period of time.

**Peak load plant**

A plant usually housing old, low-efficiency steam units, gas turbines, diesels, or pumped storage hydroelectric equipment normally used during the peak-load periods.

**Peak load station**

- A generating facility operated expressly for the purpose of providing peak energy supply.
- Typically operated only during particular times of day or at times of the year when there is a spike in the demand for energy for heating or cooling systems.
- Tend to be cheaply-constructed turbine generating units that do not use steam as an intermediate carrier of energy, and are thus less fuel-efficient and more costly to operate.
- The fact that they are only operated at particular times also makes them more costly to maintain, and these extra costs are typically factored into the energy costs of the heaviest consumers of energy during peak demand periods.

**Peak load, peak demand**

The maximum power requirement of a system at a given time, or the amount of power required to supply customers at times when need is greatest. They can refer either to the load at a given moment (eg, a specific time of day) or to averaged load over a given period of time (eg, a specific day or hour of the day).

**Peak responsibility**

- A specific customer or group of customers at a given time of peak energy demand.
- The level of responsibility of that customer or group.

**Peak supply**

- The party who supplies energy used to meet peak demand requirements.
- A supply of energy that will be used to augment existing energy sources during periods of peak demand.

**Peak shaving**

During times of peak demand, supplies from sources other than normal suppliers are used to reduce demand on the system.

**Peaking Capacity**

Capacity of generating equipment normally reserved for operation during the hours of highest daily, weekly, or seasonal loads.

**Peaking generation**

Electric generating equipment normally operated to serve loads only during annual peak loads or during system emergencies.

**Performance letter of credit**

Letter of credit used to guarantee performance under a contract.

**Petroleum (crude oil)**

- A naturally occurring, oily, flammable liquid composed principally of hydrocarbons.
- Crude oil is occasionally found in springs or pools, but usually is drilled from wells beneath the earth's surface.

**Phelix**

Phelix means Physical Electricity Index. Calculated on a daily base, the Phelix is the average price for base load (Phelix Day Base) and peak load (Phelix Day Peak) electricity traded on EEX Spot Market.

**Pipeline imbalance**

Companies that transport and use storage facilities in a pipeline system are obliged by the pipeline operator to keep their input and off-take volumes in balance (within tolerance limits). If there is a positive or negative pipeline imbalance, the transporting companies are financially heavily penalised by the pipeline.

**Pipeline interconnect**

Where large pipelines meet and gas can be switched from one pipeline to another, such as Henry Hub in the US.

**Pin risk**

The risk to a trader who has sold an option that, on expiry, has a strike price identical to, or pinned to, the underlying futures price. In this case, the trader will not know whether he will be required to assume his options obligations.

**Planned outage, unplanned outage, scheduled outage**

- Unplanned Outage: Any interruption in the generation, transmission, or distribution of energy that is not scheduled.
- Planned Outage: Interruptions prearranged on relatively short notice.
- Scheduled Outage: Routine interruptions planned well in advance, such as those scheduled for routine maintenance or inspection of equipment.

**Point(s) of delivery**

Point(s) of interconnection on the Transmission Provider's Transmission System where capacity and/or energy transmitted by the Transmission Provider will be made available to the Receiving Party. The Point(s) of Delivery shall be specified in the Service Agreement.

**Point-to-point transmission service**

The reservation and/or transmission of energy on either a firm basis and/or a non-firm basis from point(s) of receipt to point(s) of delivery, including any ancillary services that are provided by the transmission provider in conjunction with such service.

**Pollution credits**

Monitored by the US Environmental Protection Agency (EPA), US-based companies have a limit on the various types of pollution they can produce. If the actual pollution they produce is below this, they have pollution credits, which can be traded. This process is known as emission trading. Traders predict that emission trading will grow into a major business when countries start to comply with the Kyoto Agreement.

**Portfolio management**

- Management of an energy portfolio consisting of available energy supplies and any efficiency or demand-reduction services that affect actual market demand.
- Any activity related to arranging, scheduling and administration of these resources and services, and most commonly refers to resource management specifically aimed at reducing risks such as shortage of energy supplies, extremes in prices, labour difficulties or unforeseen problems with transmission.

**Portfolio requirements**

- When producers of energy are obliged to maintain minimum levels or proportions of fuel or energy from renewable resources.
- Requirements that energy producers meet obligations to supply their customers. These requirements may be contractual or legislated, depending on where the producer is located.

**Potential peak load reduction**

- The amount of annual peak load reduction capability (measured in kilowatts) that can be deployed from Direct Load Control, Interruptible Load, Other Load Management, and Other DSM Program activities.
- The load that can be reduced either by the direct control of the utility system operator or by the consumer in response to a utility request to curtail load.
- The installed load reduction capability, as opposed to the Actual Peak Reduction achieved by participants, during the time of annual system peak load.

**Power**

Electricity

**Power exchange**

Entity established in California to provide an efficient competitive auction, open on a non-discriminating basis to all electricity suppliers, which meets the loads of all exchange customers at efficient prices.

### Power factor, loss factor, standby loss factor

One volt at one ampere is usually calculated as one watt of power.

- **Power Factor:** The ratio between actual work done and the potential to perform real work, usually expressed as a percentage of total current throughput.
- **Loss factor:** An expression of the average power factor over a given period of time, and is used in the energy industry to express the losses in transmission and distribution from heat, incomplete combustion of fuels and other inefficiencies.
- **Standby Loss Factor:** A ratio between actual and potential energy consumed, but it refers to the loss of energy that results from keeping a device on standby service without actually using it.

### Power grid

An interconnected network of electric power transmission lines. The United States power grid, which covers most of the country as well as parts of Canada and Mexico, is made up of three major networks:

- Eastern Interconnect
- Western Interconnect
- Texas Interconnect

### Power Purchase Agreement (PPA)

PPA refers to a contract entered into by an independent power producer and an electric utility. The power purchase agreement specifies the terms and conditions under which electric power will be generated and purchased. Power purchase agreements require the independent power producer to supply power at a specified price for the life of the agreement. While power purchase agreements vary, their common elements include: specification of the size and operating parameters of the generation facility; milestones in-service dates, and contract terms; price mechanisms; service and performance obligations; dispatchability options; and conditions of termination or default.

### Power marketers

- Business entities engaged in buying and selling electricity, but do not own generating or transmission facilities.
- As opposed to brokers, take ownership of the electricity and are involved in interstate trade.
- File with FERC for status as a power marketer.

**Power plant**

- Most commonly, a generating station or energy production facility.
- A site, structure or location where electricity is produced.

**Power pool**

Consists of two or more utilities that combine their resources to better meet their individual needs. These resources can include generating facilities, transmission system access, emergency response capability and even accounting and billing databases. This pooling of resources allows utilities to keep costs low and ensure higher reliability through 'strength in numbers'. Pooling is an accepted, desirable and often mandatory efficiency strategy in regulated energy markets, but in deregulated markets it is usually a voluntary activity.

**Pre-schedule**

To schedule for delivery of physical power on a day-ahead basis.

**Price**

The amount of money or consideration-in-kind for which a service is bought, sold, or offered for sale.

**Price cap**

- A cap, or limit, on the price that may be charged for a commodity.
- Used to prevent gouging during times of short supply or to limit price increases to a certain level.
- Most frequently used to prevent price gouging during temporary energy shortages and to provide individuals and businesses with an upper limit figure for energy for financial planning purposes.

**Price index**

A base point for pricing commodities.

**Price signal**

A message sent to customers in the form of a price charged for a commodity; usually indicates a message intended to produce a particular result.

### Price-inflexible demand, price-flexible demand, demand bid

- **Price-inflexible Demand:** Energy purchased on a power exchange (PX) or POOLCO which doesn't have a maximum price. These bids ensure that the buyer gets needed energy regardless of availability, and the price paid is usually the highest current price for energy at the time the bid is answered at auction.
- **Price-flexible Demand:** Energy purchased with a bid that includes a maximum price that the customer is willing to pay. A demand bid is a bid for price-flexible demand.

### Pricing options

Competitive energy providers in deregulated markets have a wide range of pricing options available to them. Some charge a fixed price for every kilowatt-hour of electricity consumed. Some charge based on the amount of energy used. Some charge based on usage at a given time of day, with higher kilowatt-hour charges during peak demand periods. In addition, prices may vary depending on the package of services ordered or the level of efficiency with which energy is used.

### Primary market

A market where newly-issued securities are traded.

### Profit

The income remaining after all business expenses are paid.

### Prudence test

A set of criteria used to measure an investment or enterprise against specific standards. The objective is to determine whether the investment or enterprise is worth pursuing or investing in by judging how well it meets the challenge established by the judgment criteria.

The public scrutiny which a project must undergo before it is allowed to continue beyond a planning phase, but it may also refer to a test that a company or other party sets for itself before deciding whether to proceed with a particular investment or business activity.

**Public Service Commission (PSC), Public Utility Commission (PUC),  
Commerce Commission**

- A body charged with managing or regulating one or more publicly-owned utilities in a given service area. Different regions and municipalities may choose different names for this body.
- Operate at a municipal, regional or state level depending on the locale, and they provide economic oversight, policy guidance and direction to the utilities in their jurisdiction.
- Commissions are responsible to the public, are usually open to public input, and are often managed by elected officials.
- PSC: May oversee a single utility, usually its electric service, or they may manage a collection of several utilities, which could include water, roads, waste removal, parks and recreation, fire departments and ambulance service, among others.

**Public utility, publicly-owned utility (POU)**

A utility that is collectively owned by citizens of the area served by the utility. Public electric utilities include co-ops (rural, industrial and others), municipal utilities, and energy and power marketing authorities.

**Purchased capacity**

The amount of electric energy and capacity available for purchase from outside a utility system.

**Purchased power adjustment**

A charge or, rarely, a discount on an energy bill for energy that has been acquired from a source other than the utility's usual energy sources, for example from another neighbouring utility.

Charge that is typically applied only when the price of the outsourced energy is different from the price of energy acquired from a primary source or generated by the utility from its own facilities.



**Put-call parity**

The payout profile of a portfolio containing an asset plus a put option is identical to that of a portfolio containing a call option of the same strike on that same asset (with the remainder of the money earning the risk-free rate of return). This can be used to arbitrage a position.

**Put option**

An option that gives the buyer, or holder, the right, but not the obligation, to sell a futures contract at a specific price within a specific period of time in exchange for a one-time premium payment. It obligates the seller, or writer, of the option to buy the underlying futures contract at the designated price, should the option be exercised at that price.

**Put spread**

An options position comprising the purchase of a put option at one level and the sale of a put option at some lower level. The premium received by selling one option reduces the cost of buying the other, but participation is limited if the underlying goes down.

**Qualified facility (QF)**

A generator or small power producer that meets certain ownership, operating, and efficiency criteria established by the Federal Energy Regulatory Commission (FERC), and has filed with FERC for QF status or has self-certified. QFs are physical generating facilities.

**Quality or grade**

- An informal classification of coal relating to its suitability for use for a particular purpose.
- Individual measurements such as heat value, fixed carbon, moisture, ash, sulphur, major, minor, and trace elements, coking properties, petrologic properties, and particular organic constituents. The individual quality elements may be aggregated in various ways to classify coal for such special purposes as metallurgical, gas, petrochemical, and blending usages.

**Quanto product**

An asset or liability denominated in a currency other than that in which it is usually traded. Since the combined exposure to the asset and to the foreign exchange rate will change continuously, the structures must be dynamically hedged.

**Ramping**

- A steady change in a generator's output level over time.
- Ramping up is the gradual increasing of a generator's output; ramping down is a gradual decrease.

**Range binary**

A financial instrument that pays out if a specified spot rate trades within a given range over a specified period of time, in exchange for the payment of an upfront premium. The lower the volatility of the spot rate, the more likely the buyer is to benefit.

**Ratchet**

An accounting term that refers to a charge that is calculated based on previous charges for a given type, quantity or quality of service.

**Ratchet demand clause**

A term in a customer's contract or rate schedule (tariff) that dictates that the customer's billings for each billing period must be based at least in part on the maximum billing that customer received over a given period, usually the preceding year.

**Rate base**

- The value of property where a utility is permitted to earn a specified rate of return as established by a regulatory authority.
- Generally represents the value of property used by the utility in providing service and may be calculated by any one or a combination of the following accounting methods: fair value, prudent investment, reproduction cost, or original cost.
- Rate base includes cash, working capital, materials and supplies, and deductions for accumulated provisions for depreciation, contributions in aid of construction, customer advances for construction, accumulated deferred income taxes, and accumulated deferred investment tax credits.

**Rate case**

A proceeding where an energy provider applies for rate increases.

**Rate class**

A group of customers that is distinguished by the rate that this group pays for service as opposed to the actual customer class, where they would otherwise belong.

**Rate design**

The structuring of energy prices based on customer classification and subclassification and costs associated with these classifications, operating costs, legislative requirements and policy goals, among other factors.

**Rate of return**

The percentage of an investment that can be recovered or returned as profit in a given amount of time, usually a year.

**Ratio spread**

Any spread where the number of long market contracts and the number of short market contracts are unequal.

**Rebate**

A rebate is paid to the holder of a derivative such as a barrier option if the instrument is knocked out or is never activated.

**Real discount rate**

The rate of return on an investment after inflation is factored in. Real discount rate is the percentage of a given investment that is paid back at the end of the year in dollars valued at the end of that year.

**Real price**

A price that has been adjusted to remove the effect of changes in the purchasing power of the dollar. Real prices, which are expressed in constant dollars, usually reflect buying power relative to a base year.

**Real time pricing, time-of-use (TOU) rates**

A method of pricing energy based on either the actual market value or the utility's cost for energy at the time when it is used.

**Reference price**

In an energy derivatives contract, the settlement price of the contract based on a particular location or particular blend of the commodity.

**Refined products**

The products derived from crude oil that have been processed in a refinery.

**Refinery**

A plant where crude oil is separated into various components such as usable products or feedstocks.

**Reinvestment risk**

The risk that an asset manager will be unable to match the yield from an interest-rate instrument (such as a swap or bond) when reinvesting its coupon payments and principal repayments.

**Regional power exchange**

An entity established to coordinate short-term operations to maintain system stability and achieve least-cost dispatch. The dispatch provides back-up supplies, short-term excess sales, reactive power support, and spinning reserve. The pool may own, manage and/or operate the transmission lines, or be an independent entity that manages the transactions between entities.

**Regulation**

- The process of increasing or decreasing capacity in the system in response to changes in customer requirements. This type of regulation usually occurs at generating facilities, although the capacity of transmission and distribution systems can also be regulated.
- The actual amount of generating capacity that can be added to or removed from the system by an independent system operator's energy management system. In this context, a system's regulation is its capacity to be adjusted (regulated) on demand.
- An enforceable law or a rule of conduct that governs an industry's business practices or operations. Federal and state regulations that apply to the US energy industry must first be put forward for public comment before they can be enacted into law by governing bodies, and these regulations usually prescribe penalties for violators. Regulations that the industry imposes on itself are not necessarily offered for public comment, and may not be subject to penalties if they are violated.

**Regulatory commission**

An agency under the auspice of a state/provincial or national government that oversees an industry, industry sector, or segment of an industry.

**Relative performance option**

An option that gives the purchaser the right to the return from a single asset from a basket of two or more, either as a cash settlement or by physical delivery. The asset selected may be the best or worst performing of the assets in the basket, as measured against a common or independent benchmark.

**Replacement cost**

The replacement cost of a financial instrument is its current market value. In credit risk terms, it is the cost of replacing a given contract if the counterparty defaults.

**Replication**

- To replicate the payout of an option by buying or selling other instruments.
- Dynamic replication involves dynamically buying or selling the underlying (or futures, where transaction costs are cheaper) in proportion to an option's delta.
- Static replication is where the option is hedged with a basket of standard options whose composition does not change with time.

**Repo agreement**

To buy (or sell) a security while at the same time agreeing to sell (or buy) the same security at a predetermined future date. The price of the second transaction determines the repo rate, the interest rate earned on the security between the two transactions. In a reverse repo, the buyer sells cash in exchange for a security.

**Required system reserve**

Backup power that must be made available at all times to meet fluctuations in system demand within a given range. This reserve is essential in all energy networks to ensure smooth, continuous delivery of energy at proper voltage and current levels.

**Reserve margin, reserve capacity**

- A measure of available capacity over and above the capacity needed to meet normal peak demand levels.
- A producer's capacity to generate more energy than the system normally requires. For a transmission company, it refers to the capacity of the transmission infrastructure to handle additional energy transport if demand levels rise beyond expected peak levels.
- Regulatory bodies usually require producers and transmission facilities to maintain a constant reserve margin of 10-20% of normal capacity as insurance against breakdowns in part of the system, or sudden increases in energy demand.

**Residual fuel oil**

The topped crude of refinery operation, includes No. 5 and No. 6 fuel oils as defined in American Society for Testing and Materials (ASTM International) specification.

**Resource efficiency**

- Refers either to the effectiveness with which a given resource is used, or to practices intended to enhance that effectiveness.
- The efficient use of combustible fuels, but it can also refer to efficient use of resources ranging from reservoir water to labour and investment capital.

**Retail**

Sales covering electrical energy supplied for residential, commercial and industrial end-use purposes. Other small classes, such as agriculture and street lighting, are also included in this category.

**Retail choice**

The available suppliers from which a customer may choose (range of retail choice), or the consumer's ability to choose from among those suppliers (power of retail choice).

**Retail wheeling**

A power company's use of another company's transmission line to distribute power to one of its own customers.

**Return on equity (ROE)**

Profit made on stock (equity) in a company or venture.

ROE for public utilities is typically calculated based on an estimated ROE from stock in an unregulated corporation. This must be done to keep public utility investment attractive to investors, since most utilities require investment funding to finance expansion, maintenance and other essential costs. Investors must believe they will receive a certain level of return from public utility investment, or they will not likely invest in these utilities.

**Revenue**

The total amount of money a firm receives from sales of its products and/or services, gains from the sales or exchange of assets, interest and dividends earned on investments, and other increases in the owner's equity, except those arising from capital adjustments.

**Revenue requirement**

The amount of money that a utility must receive from its customers to cover its costs, operating expenses, taxes, interest paid on debts owed to investors and, if applicable, a reasonable return (profit).

**Reversal**

To take advantage of mispriced options by creating a synthetic long futures position and hedging it by selling futures contracts against it. A trader may buy an undervalued call, at the same time selling a fairly valued put and buying a futures contract. The same strategy could be applied if the put was undervalued. The ability to undertake this riskless arbitrage relies on put-call parity.

**Rho**

A measure of an option's sensitivity to a change in interest rates; this will impact on both the future price of the option and the time value of the premium. Its impact increases with the maturity of the option.

**Risk management**

Control and limitation of the risks an organisation faces because of its exposure to changes in financial market variables, such as foreign exchange and interest rates, equity and commodity prices or counterparty creditworthiness. This may be because of the financial impact of an adverse move in the market variable (market risk), because the organisation is ill-prepared to respond to such a move (operational risk), because a counterparty defaults (credit risk) or because a specific contract is not enforceable (legal risk). Market risks are usually managed by hedging with financial instruments, although a firm may also reduce risk by adjusting its business practices (see natural hedge). While financial derivatives lend themselves to this purpose, risk can also be reduced through judicious use of the underlying assets, eg, by diversifying portfolios.

**Risk measurement**

Assessment of a firm's exposure to risk.

**Roll-lock swap**

A swap that enables futures traders to lock in their roll-over costs by paying the average difference between near and far contracts.

**Roll-over risk**

The risk that a derivative hedge position will be at a loss at expiry, necessitating a cash payment when the expiring hedge is replaced with a new one.



**Royalties**

Payments, in money or kind, of a stated share of production from mineral deposits, by the lessee to the lessor.

May be an established minimum, a sliding-scale, or a step-scale. A step-scale royalty rate increases by steps as the average production on the lease increases. A sliding-scale royalty rate is based on average production, and applies to all production from the lease.

**Running and quick-start capability**

The net capability of generating units that carry load or have quick-start capability.

Generating units that can be available for load within a 30-minute period.

**Safe custody**

The only EU emission allowances that can be traded are those that are kept in trust by ECC AG in its collective account at DEHSt.

**Scheduled outage**

The shutdown of a generating unit, transmission line, or other facility, for inspection or maintenance, in accordance with an advance schedule.

**Scheduling coordinator (SC), scheduler, dispatcher**

A person or body responsible for managing the scheduling of electrical transmission systems. SCs tend to be trained engineers or planners, as opposed to appointed bodies or executives.

**Seasonality**

All energy futures markets are affected to some extent by an annual seasonal cycle or 'seasonality'. This seasonal cycle or pattern refers to the tendency of market prices to move in a given direction at certain times of the year.

**Securities and Exchange Commission (SEC)**

The Securities and Exchange Commission, a US federal authority that oversees securities trading, exchanges and markets.

**Securitisation**

A somewhat complex financing process that utilities use to generate capital or pay down debt.

**Seller, supplier**

An entity (individual, company or organisation) able to deliver electrical energy to a customer. Sellers do not necessarily produce energy, and don't necessarily sell to end-use customers.

**Seller's market**

A market situation in which there is a scarcity of goods available, and hence sellers can obtain better conditions of sale or higher prices. Opposite of buyer's market.

**Service agreement**

The initial agreement and any supplements thereto entered into by the Transmission Customer and the Transmission Provider for service.

**Settlement**

The combined process of billing and payment for products and/or services. Accounts are not said to be settled until both customer and supplier have everything to which their agreement entitles them, and that includes all payment to the supplier and all receipts and other materials the buyer needs.

**Settling price**

The price established by the Exchange settlement committee at the close of each trading session as the official price to be used by the clearinghouse in determining net gains or losses, margin requirements, and the next day's price limits. The term 'settlement price' is often used as an approximate equivalent to the term 'closing price'. The close in futures trading refers to a brief period at the end of the day, during which transactions frequently take place quickly and at a range of prices immediately before the bell. Therefore, there frequently is no one closing price, but a range of prices. The settlement price is derived by calculating the weighted average of prices during that period.

**Settlement risk**

The risk that arises when payments are not exchanged simultaneously.

**Skew**

A measure of the asymmetry of a distribution. A perfectly symmetrical distribution has zero skew, whereas a distribution with positive (or negative) skew is one where outliers above (or below) the mean are more probable. An example is the distribution implied by the presence of a volatility skew between out-of-the-money call and put options.

**Slamming**

The practice of switching one company's customers to another company providing the same service without the consent, and often without the knowledge, of the actual customer. When a customer is slammed to a new company, they may find themselves facing charges and conditions they never agreed to, and are often required to pay those charges to avoid disconnection of service. These charges can usually be recovered through legal action, but the cost and inconvenience of legal action has often forced customers to swallow the costs. Energy industry deregulation laws in the US normally prohibit the practice of slamming, and prescribe penalties for companies caught in the act. Slamming was a relatively common practice in the telecommunications industry in the 1990s until legislators clamped down on the practice.

**Sleeving**

A transaction whereby a counterparty, which does not have credit with another counterparty, asks a third party that has credit with both parties to be a middle person to facilitate a trade. This practice achieved some notoriety in 1998 when it emerged that the collapsed US power marketer Power Company of America had been regularly sleeving forward electricity deals.

**Small power producer (SPP)**

Under the Public Utility Regulatory Policies Act (PURPA), a small power production facility (or small power producer) generates electricity using waste, renewable (water, wind, and solar), or geothermal energy as a primary energy source. Fossil fuels can be used, but renewable resource must provide at least 75 percent of the total energy input (See Code of Federal Regulations, Title 18, Part 292).

**SO<sub>2</sub> allowance trading**

Allowance trading is the centerpiece of the Washington, DC-based Environmental Protection Agency's (EPA) Acid Rain Program. Allowances are the currency where compliance with SO<sub>2</sub> emission requirements is achieved. They authorize a unit within a utility or industrial source to emit one US ton of SO<sub>2</sub> during a given year or any year thereafter. Utilities that can use high sulphur coal, which commands a lower price per British Thermal Unit (Btu) than low sulphur coals, can buy an SO<sub>2</sub> allowance and bundle it with a high sulphur coal purchase to produce more energy.

**Spark-spread**

The difference between the price of electricity sold by a generator and the price of the fuel used to generate it, adjusted for equivalent units. The spark spread can be expressed in US\$/MWh or US\$/MMBtu (or other applicable units). To express in US\$/MWh, the spread is calculated by multiplying the price of gas, for example (in US\$/MMMBtu), by the heat rate (in Btu/KWh), dividing by 1,000, and then subtracting the electricity price (in US\$/MWh).

**Specific risk**

The portion of a security's market risk that is unique to that security rather than the market in general – eg, the risk that an individual stock's price may vary because of its industrial sector rather than the broader equity market.

### Speculation

- The opposite of hedging.
- Holding no offsetting cash market position, and deliberately incurs price risk in order to reap potential rewards.

### Spinning reserve, non-spinning reserve

- **Spinning Reserve:** Any back-up energy production capacity which is can be made available to a transmission system with 10 minutes' notice and can operate continuously for at least two hours once it is brought online.
- **Non-spinning Reserve:** Generating capacity that is capable of being brought online within 10 minutes if it is offline, or interrupted within 10 minutes if it is online, and which is capable of either being operated or interrupted for at least two hours.

### Spot market, real-time market

The spot market is a real-time commodity market for instant sale and delivery of energy. Spot markets exist for natural gas, where they're operated on a time scale of days to weeks, and for electricity, where the time scale can be as small as a few minutes. There is no single spot marketplace for energy. Spot markets can operate wherever the infrastructure exists to conduct the transactions. Most spot markets that used to be conducted on trading floors are now operated over the Internet.

### Spot price pool

Neutral, independent exchanges set up to facilitate rapid fair-value transactions among groups of energy producers and consumers. They function similarly to spot markets, typically accepting price bids no more than a day in advance for delivery periods typically under an hour in length, and transacting energy at market clearing prices or highest bid prices. Spot price pools differ from spot markets in that they act as a cooperative service and may even be mandatory in some markets.

### Spot purchases

A single shipment of fuel or volumes of fuel, purchased for delivery within one year. Spot purchases are often made by a user to fulfill a certain portion of energy requirements, to meet unanticipated energy needs, or to take advantage of low fuel prices.

**Spread option**

An option written on the differential between the prices of two commodities. Spread options may be based on the price differences between prices of the same commodity at two different locations (location spreads); prices of the same commodity at two different points in time (calendar spreads); prices of inputs to, and outputs from, a production process (processing spreads); and prices of different grades of the same commodity (quality spreads). The New York Mercantile Exchange offers the only exchange-traded options on energy spreads: the heating oil/crude oil and gasoline/crude oil crack spread options.

**Stakeholder**

- An individual, commercial entity, government body or other party with a real interest, or stake, in a given activity or occurrence. Both a stockholder in a utility and a customer of that utility can be considered stakeholders in that utility's activities, because they can both be affected by the utility's actions and policies.
- A party with a financial interest, specifically ownership or part-ownership of the thing referred to; but a non-financial interest can also be thought of as a stake.

**Standard deviation**

Statistical measure of the degree to which an individual value in a probability distribution tends to vary from the mean of the distribution. Indicates probability of a variable or price falling within a certain width or band around the mean.

**Standard offer, standard offer service**

A service package supplied by a utility to customers in a newly-deregulated market, which is provided to the customer as a transitional service while competition gets established in that market and customers learn about available competitive options.

**Stochastic process**

A process where the evolution of some random variable is over some parameter such as time. Geometric Brownian motion, commonly used to describe the movements of asset prices, is one example.

**Stochastic volatility**

The Black-Scholes model of option pricing assumes that stock prices follow geometric Brownian motion with constant volatility and interest rates. The assumption of constant volatility fails for real markets, however, prompting a number of attempts to model volatility as a stochastic process.

**Storage capacity**

The amount of gas that can be stored to cover peak demand.

**Storage gas**

Gas kept in storage in order to balance supply and demand over time.

**Straddle**

The combination of a put and a call option with the same expiry date and strike price. A buyer of a straddle hopes that the volatility of the underlying prices will increase, creating profit opportunities.

**Stranded costs**

The costs accumulated by electric utilities that have built expensive power plants and entered into high-priced power purchase agreements, which are no longer commercially viable when competition forces prices down and reduces market share.

**Strangle**

An options position consisting of the purchase or sale of put and call options having the same expiry, but different strike prices.

**Strategic conservation**

Strategic conservation results from load reductions occurring in all or nearly all time periods. This strategy can be induced by price of electricity, energy-efficient equipment, or decreasing usage of equipment.

**Stress testing**

To stress-test is to simulate an extreme market event and examine what happens to prices under the 'stress' of that behaviour.

**Strike price**

The price at which the underlying futures contract is bought or sold in the event an option is exercised.

The exercise price.

**Structural separation**

- A process of splitting an electric utility into subsidiaries, so that the same company is not involved in producing energy and delivering it to customers. Structural separation is often required by law in newly-deregulated markets to protect consumers and emerging competitive utilities against monopoly abuses and to encourage stronger competition.
- A requirement made of electric utilities that they restructure themselves to separate their transmission or distribution services from other services they may provide. This form of structural separation is done to prevent utility companies from monopolising energy provision services in a particular area.

**Structured note**

An over-the-counter product that may incorporate several different individual instruments, generally options embedded in a debt instrument such as a medium-term note. The intention is generally to construct a payout profile that is attractive to a specific investor or group of investors, because of their risk/reward preferences and/or opinions on the market.

**Sulphur dioxide**

This smelly substance, a gas with the distinctive odor of rotten eggs, is produced as a byproduct of burning sulphur-containing fossil fuels such as coal and natural gas. This substance changes into highly corrosive sulphuric acid when exposed to water vapor suspended in the air, and when it falls back to earth as acid rain, it can cause significant damage to virtually everything in the environment. Most airborne sulphur dioxide is produced by coal-fired generating plants.

**Summer peak**

A mid-year period, usually between June 1 and September 30, when the use of cooling systems creates the strongest demand for energy in areas with hot summer weather.

**Sunshine option**

A corollary to the precipitation swap, this instrument is linked to the number of hours of sunshine. The party taking out a sunshine option would be compensated if the number of hours of sunshine fell before a certain level.



**Supervisory control and data acquisition (SCADA)**

A computer system used to monitor and control some or all aspects of energy production, transmission and/or distribution.

**Supplier of last resort**

- An energy supplier who is automatically assigned to serve an existing customer immediately following deregulation.
- An energy supplier who must supply a given classification or subclassification of customers who may not be able to acquire energy from any other provider. In most cases, the supplier of last resort is the utility company that the customer used before deregulation.

**Supplier, electric supplier**

Any company, individual or organisation that sells electricity to customers through its own transmission and distribution facilities, or through another company's facilities.

**Supply charge, electric supply charge**

The cost of electricity provided by a supplier. Literally, it is the charge for a supply of electricity, and includes the cost of the generated energy plus any mark-ups and additional charges applied before the customer receives it.

**Supply-side**

Describes the half of the economic equation related to supplying products or services. Supply-side activities include the activities of producers, wholesalers and distributors orientated to producing and delivering a commodity. In the energy industry, anything occurring in the energy delivery chain outside of the customer's meter is considered supply-side.

**Swap**

A collection (portfolio) of forward contracts that is usually tailored to balance a particular situation. A swap can be used to ensure that a set of contracts is reasonably well insured against sudden changes of value in one or more of the component contracts, or to guard against market conditions that could adversely affect the value of one type of contract in a portfolio.

**Swaption**

An option to purchase (call option) or sell (put option) a swap at some future date.

**Swing**

Variations in gas demand.

**Swing factor**

In gas purchasing agreements the swing factor is a measure of the flexibility to vary nominations, and is expressed as a ratio of peak to average supplies.

**Swing option**

The right to take more or less of a specified commodity. The opportunity to swing up is effectively a call option on the commodity specified in the contract, and the opportunity to swing down is a put option on the commodity, subject to obligations to take certain quantities over the entire life of the contract. Swing options are most commonly used in the gas market.

**System (electric)**

Physically connected generation, transmission, and distribution facilities operated as an integrated unit under one central management, or operating supervision.

**System integration**

The process of fitting new technology systems, usually computerised, into the day-to-day operations of a given enterprise. The process involves both the installation and configuration of hardware and software, plus any analysis or diagnostic procedures that may be needed to ensure the integrity and/or efficiency of the installed system.

**System loss**

The total of all energy lost or wasted on a system due to line loss and other forms of energy loss, unaccounted energy use and theft, among other factors, is referred to as system loss.

**System reserve**

The total of all capacity available within the system and obtainable on demand using existing firm contracts over and above the amount required to meet peak demand.

**System sale, on-system sale**

A sale to customers where the delivery point is on, or directly interconnected with, a transmission system.

**System swing load**

- The difference between peak and base (minimum) system loads.
- A measurement of how widely demand levels swing over a given period of time, usually a day.

**Systemic risk**

The risk that the financial system as a whole may not withstand the effects of a market crisis. In recent years, attention has been focused on the derivatives markets, where a handful of players dominate trading. The concern is that the failure of any of these might have serious and widespread consequences for others in the market.

**System-wide power agreement**

A pact or written contract between an energy supplier or group of suppliers and all customers of that group, setting forth terms and conditions that apply to the group as a whole, with few or no special conditions set out for any individual participant in the agreement.

**T&D**

Transmission and distribution

**Take-or-pay**

The obligation to pay for a specified amount of gas whether this amount is taken or not. Depending on the contract terms, under-takes or over-takes may be taken as make-up or carry forward into the next contract period. When it is credited into another contract period, this is called make-up gas.

**Tariff, tariff schedule**

A tax or levy system, or a document that outlines the conditions under which taxes and levies can be charged. Tariffs are normally filed with governments or regulatory bodies and approved by these same bodies. Tariffs typically list schedules for rates, contracts, and contract and rate eligibility. When provided in printed or digital document form, tariff documents may include terms and conditions, sample forms, copies related to legislation or regulations and other related information. Tariffs are used in virtually all service industries.

**Technical analysis**

Based on the presumption that price takes into consideration all factors that could influence the price of the commodity. It is therefore broader than fundamental analysis, which looks at supply and demand. Past price movements can be analysed for indication of future commodity price movements.

**Technical rally**

A short rise in commodity futures prices within a general declining trend. Such a rally may result from bargain hunting by market participants or because technical analysts have noticed a particular support level at which the commodity price is expected to increase.

**Technical sign**

A significant short-term trend identified through technical analysis of a commodities' price movement.

**Therm, decatherm**

A measurement of heat equivalent to 100,000 BTU. Decatherm is more widely used in the energy industry. A decatherm equals one million BTU.

**Theta**

Option risk parameter that measures the speed of time decay of the option premium.

**Tight pool**

A group of utilities that combine their generating and transmission facilities for more cost-effective management of delivery (economic dispatch). Pool revenues and energy acquisition are shared among all members.

**Time value**

Part of the option premium that reflects the excess over the option's intrinsic value, or the entire premium if there is no intrinsic value. At given price levels, the option's time value will decline until expiry.

**Tolling arrangement**

An exchange or barter agreement where a party is paid for fuel or the transport of fuel to a generating facility using energy generated at the facility rather than cash.

**Transmission**

The transportation of bulk energy along a network or grid of power lines. It is often intended to refer specifically to high-voltage (69,000 volts or higher) electricity of the type bought and sold on the wholesale market. An additional stage of service, referred to as distribution, is required to actually deliver usable low-voltage energy to an end-use customer.

**Transmission access, wheeling utility**

The right to use facilities and infrastructure for transporting energy across a high-voltage transmission grid. More specifically, it refers to rights granted to non-owners and non-operators of transmission facilities to deliver energy along transmission lines to wholesale customers. The party granting this access is commonly referred to as the wheeling utility.

**Transmission charge**

A charge added to a customer's electrical bill, which is intended to cover the cost of transmitting energy over the transmission grid between the generating facility and the local utility's distribution facilities.

**Transmission company (TRANSCO), transmitting utility**

An independent company that owns and/or maintains energy transmission facilities; or more correctly, a theoretical company that, if it existed, would engage in this activity.

**Transmission congestion**

Occurs when there is insufficient energy to meet the demands of all customers.

**Transmission congestion contract (TCC)**

A type of financial arrangement usually made by a wholesale customer or high-volume retail customer that acts as an insurance policy against increased energy costs or lack of availability that could result from transmission congestion.

**Transmission line, transmission system, distribution line**

A single cable carrying electricity over a transmission system.

The physical path traveled by electricity on its way from producer to consumer.

**Transmission system (electric)**

An interconnected group of electric transmission lines and associated equipment for moving or transferring electric energy in bulk between points of supply and points where it is transformed for delivery over the distribution system lines to consumers, or is delivered to other electric systems.

**Trigger condition**

The payout of path-dependent options such as barrier options and digital options depends on a specified market variable satisfying a specific trigger condition. The most common condition is that the spot rate (or price) of the underlying must trade through a specified level before the option becomes active (or inactive), but many other types of condition are possible.

**Trip, trip-out**

- The disconnection or breaking of a circuit, usually in context of an automatic interruption of the circuit such as the opening of a circuit breaker.
- The changing of a switch's position, whether performed manually or automatically.

**True-up mechanism**

An accounting practice that uses adjustments to rates and customer billings to ensure that customers are not overbilled for a service through charges for non-service-related expenses such as stranded costs. True-up mechanisms are often required by legislation as a consumer protection measure.

**Title Transfer Facility (TTF)**

The Title Transfer Facility, more commonly known as TTF, is a virtual trading point for natural gas in the Netherlands.

**Two-part rate**

A rate for energy consisting of two components, one to cover actual energy use and another to cover demand. Functionally equivalent to rolling demand charges into energy charges.

**Unaccounted for gas (UFG)**

Gas that is lost through leakage or errors in measurement.

**Unbundled rates**

Rates charged for the specific services that make up energy provision.

**Unbundled services**

Prior to deregulation of the US energy industry, most energy customers were provided with electrical service as an integrated package. Energy customers in Canada still receive service in this fashion. As more competition emerges in the energy industry and more companies become involved in the production and delivery of energy, separate charges for each facet of electrical supply and service is billed as a distinct line item charge on a customer's invoice.

Customers no longer pay for a group of services represented as a single service. Instead they pay for a multitude of services (energy generation, transmission, distribution, and perhaps many more depending on how energy is billed in a given region), all of which are required for electrical service. When services are charged in this way, they are referred to as unbundled.

**Unbundling**

The separation of component parts of a previously unified product or service usually provided by a single party into distinct products or services each provided by different parties. In the energy industry, functional unbundling of services is often accompanied by the insistence on a structural unbundling of a vertically integrated utility that formerly provided all of those services. A vertically integrated utility is often required to choose one component service in which it will specialise, and restructure or divest itself of all parts of its business related to services in which it will not participate. The unbundling of a utility's divisions handling these component services is referred to as structural unbundling.

**Underlying**

The variable on which a futures, option, or other derivative contract is based.

**Uniform system of accounts**

Prescribed financial rules and regulations established by the Federal Energy Regulatory Commission for utilities subject to its jurisdiction under the authority granted by the Federal Power Act.

**Uninterruptible power supply (UPS)**

A type of backup system, usually battery-powered, used to ensure continuous availability of power in the event of an interruption of service. These are most commonly used with PCs to provide emergency backup energy in the event of an unplanned outage or brief interruption of power. In the case of momentary power outages, UPS allows operators to work through the outage by preventing the rebooting that would otherwise occur with even a split-second of interrupted power. In the case of longer outages, the UPS should provide enough energy to allow equipment operators (usually computer operators) sufficient time to properly save their data and shut down their equipment, and perhaps even continue working through the outage for several minutes to several hours. (The length of time a UPS can keep a PC functioning depends on the storage capacity of the UPS and the energy consumption of the PC.) Perhaps most importantly, UPS protects operators against the loss of data that commonly occurs when a PC reboots or shuts off without warning.

**Unit commitment**

- The commitment of generating units to the production of energy.
- Involves determining that generators in a given facility will be committed to meet the expected load over the near term. Unit commitment is usually scheduled a day in advance, and a generator is said to be committed once it is started. Nearly all generators are rotating devices, so a committed generator is often referred to as a spinning generator. A committed unit can remain offline indefinitely without producing energy.

**Unit energy consumption (UEC)**

The annual amount of energy that is used by the electrical device or appliance.

**Universal service**

- A base level of electrical service, usually a bundle of services required to meet basic residential requirements, which is used as a standard, entry-level package for customers and is typically made available to all customers regardless of energy demand. May also be referred to as standard offer.
- A policy that guarantees universal access to a basic package of electrical services at an affordable rate. It is called universal service because electric service is considered a necessity for all households in North America.



**Upside/downside risk**

- A short forward position taken without an offsetting long physical position in the underlying commodity is said to have upside risk. This means that the trader is speculating that the price of the commodity will decline.
- A long forward position taken without an offsetting short physical position in the underlying commodity is said to have downside risk. It means that the trader is speculating that the price of the commodity will increase.

**Upstream**

Oil and gas exploration and production, as opposed to downstream, which covers the areas of refining and marketing.

**Utility**

Any private company, publicly-owned organisation or other regulated entity that provides an essential service in a given area directly to end-use customers, and that has exclusive rights to provide that service or acts as a natural monopoly in the region it serves. Gas, water and electric companies all qualify as utilities.

**Variable cost**

- Costs that vary.
- Costs incurred from energy generation or transportation and delivery that change in proportion to the amount of energy used.
- Includes costs of fuel, operating expenses, equipment and facility maintenance charges, and depreciation from wear and tear on equipment among others.

**Value-at-Risk (VaR)**

- The worst loss expected to be suffered over a given period of time with a given probability. The time period is known as the holding period, and the probability is known as the confidence interval.
- Value-at-risk is not an estimate of the worst possible loss, but the largest likely loss. For example, a firm might estimate its VAR over 10 days to be US\$100 million with a confidence interval of 95%. This would mean there is a one-in-twenty (5%) chance of a loss larger than US\$100 million in the next 10 days. In order to calculate VAR, a firm must model both the way the relevant market factors will change over the holding period and the way (if any) in which these changes are correlated between market factors. It must then evaluate the potential effects of these changes on its portfolio at the desired level of consolidation (by asset class, group or business line, for example).

**Variable pricing, variable rate**

- A price for a product or service that changes over time.
- A price for a given quantity of that product or service that changes over time.
- Used to ensure that customer billings reflect the actual value of energy at the time it is consumed.

**Vega**

Option risk parameter that measures the sensitivity of the option price to changes in the price volatility of the underlying instrument.

**Vertical spread**

An option strategy relying on the difference in premium between two options that share a common underlying and maturity, but are struck at different prices.

### Volatility

- A measure of the variability of a market factor, most often the price of the underlying instrument.
- The annualised standard deviation of the natural log of the ratio of two successive prices; the actual volatility realised over a period of time (the historic or historical volatility) can be calculated from recorded data.
- One of the variables that must be specified in the Black-Scholes model of option pricing: a vanilla or non-exotic option will cost more when volatility is high than when it is low. However, volatility is the only one of these variables whose value must be estimated. The estimate used (known as the implied volatility) can be derived from the prices of options in the market and the known input variables. However, the Black-Scholes model also assumes that volatility is constant, which is not true. New techniques have been developed to cope with volatility's variability, including mean-reverting models and stochastic volatility models.

### Volatility skew

The difference in implied volatility between out-of-the-money puts and calls. The origins of the volatility skew are not always clear, but factors may include reluctance to write calls rather than puts, sentiment about market direction, and supply and demand.

### Volatility smile

If the implied volatility of an option is plotted against its strike on a graph, the chart is typically shaped like a smile (less frequently a frown). It may reflect the fact that out-of-the-money events are more common than geometric Brownian motion would predict. This leads to extra value for out-of-the-money options.

### Volatility term structure

The curve depicting the differing implied volatilities of options with differing maturities. The term structure is curved because the volatility implied by short-dated option prices changes faster than that implied by longer-term options, but other effects, such as mean reversion, may also play a part.

### Volatility trading

Trading, usually through the options markets, based on the belief that implied volatility will not match the volatility actually realised over a given period, or that the difference in implied volatility between different options will alter over a given period. Options are used because of their sensitivity to volatility.

**WACOG**

Weighted average cost of gas.

**Watt**

The electrical unit of power. The rate of energy transfer equivalent to 1 ampere flowing under a pressure of 1 volt at unity power factor.

**Weather derivatives**

Forward instruments used to hedge against or speculate on weather. Virtually all of the instruments are based on degree-days, though precipitation swaps and sunshine options are among other possible instruments.

**West Texas Intermediate (WTI)**

US crude oil used as a benchmark for pricing much of the world's crude oil production.

**Wheeling**

The delivery, and more specifically refers to delivery of energy across transmission systems. In some contexts it is used synonymously with transmission, although this use is somewhat misleading since energy can be wheeled through distribution systems as well. Wheeling across transmission systems is generally referred to as wholesale wheeling, since wholesale transactions are nearly always limited to sales made on the transmission grid. Any movement of energy between parts of the system, or within the same part of the system, that involves a change of ownership for the energy. Wholesale wheeling is the sale and delivery of energy among buyers and sellers in the wholesale market, usually to parties who take delivery of the energy on the transmission system. When a utility or energy distribution company delivers, or wheels, energy from the transmission system to an end-use customer, it is referred to as retail wheeling. When a customer who also generates energy produces energy at one site, transports it across someone else's facilities and consumes it at another site, it is referred to as self-service wheeling.

**Wholesale**

The sale of any commodity to a party who intends to resell that commodity to other parties is referred to as a wholesale transaction. In the energy industry, wholesaling is distinguished from retailing primarily by the regulatory environment that governs wholesale transactions and the distances travelled by the energy. Interstate wholesale transactions fall under Federal Energy Regulatory Commission regulations in the United States, and even most non-customer sales within the same state are referred to within the industry as retail sales. Wholesale energy sales can be made between producers, marketers, brokers, utility companies and select high-volume end-use customers. The most common form of wholesale energy transaction made between energy producers or marketers and utility companies who serve the general public.

**Winter peak**

A period at the beginning of the year, usually between December 1 and March 30, when the use of heating systems creates the strongest demand for energy in areas with cold winter weather.

**Xetra**

The Xetra system is one of the trading systems used on the EEX Spot Markets.

**Yield**

The interest rate that will make the net present value of the cashflows from an investment equal to the price (or cost) of the investment. The net present value is the present value of future cashflows, discounted at the present cost of capital. The current yield relates the annual coupon yield to the market price by dividing the coupon by the price divided by 100, neglecting the time value of money or potential capital gains and losses. The simple yield-to-maturity takes into account the effect of the capital gained or lost at maturity, as well as the current yield.

**Yield curve**

A graph of the term structure of interest rates. It is usually given in terms of the spot yields on bonds with different maturities but the same risk factors (such as creditworthiness of issuer), plotted against maturity. In general, yields will increase with maturity and with the riskiness of the debt. Yield curves can be plotted for default-free bonds; bonds that may default will fall on another yield curve at some spread to the default-free curve.

**Zero-cost option**

An option strategy under that one option is purchased by simultaneously selling another option of equal value.

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