

GLOSSARY FOR THE BODY OF KNOWLEDGE ON THE REGULATION OF UTILITY INFRASTRUCTURE AND SERVICES

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GLOSSARY FOR THE BODY OF KNOWLEDGE: INFRASTRUCTURE REGULATION

Abnormal loss - When *total revenue* fails to cover *total cost*. Firms tend to abandon industries yielding abnormal losses; then, as supply falls, prices rise and *normal profits* return.

Abnormal profit - A profit beyond that needed for the firm to continue production. When abnormal or supernormal profits persist, the industry attracts new firms, supplies increase, prices fall, and *normal profits* return unless there are barriers to entry.

Abuse of dominant position - Misuse of dominant market power by firms to maintain or augment their favorable market position.

Access - Ability for a potential entrant to enter a market. Alternatively, in a network industry, the ability for a consumer to have a connection so as to obtain a service. Access often requires initial fixed investment by the supplier (such as distribution facilities), so pricing access becomes a regulatory issue.

Access charge - A fee levied for connection to a network that permits access to a service or product; e.g., the charge for use of a utility's transmission or distribution system.

Access pricing - The amounts charged for access to a service or product.

Accountability - System of procedures that leads to clear assignments of responsibility and clear documentation when obligations are met.

Accounting separation - Keeping the accounting for different businesses or parts of businesses within companies separate so that costs and revenues can be clearly identified with their associated enterprise. Accounting separation is essential to *ring fencing*, but it may also be undertaken for different activities within the same business organization, for instance accounting separately for maintenance of overhead and underground cables. *Financial statements* released by most companies have been prepared to comply with the requirements of laws governing company operations. Thus, data so presented will seldom provide the information required for effective utility regulation. The regulator will therefore stipulate what accounting information is required and how it must be presented, even if that means keeping separate accounts for activities that had previously been considered together.

Accounting: The bookkeeping methods involved in maintaining a financial record of business transactions and in the preparation of statements concerning the assets, liabilities, and operating results of a business. The three main accounting statements are the Income Statement, Balance Sheet, and Statement of Cash Flows.

Accrual Accounting: The method of recording transactions by which revenues and expenses are reflected for the period in which they are considered to have been earned and incurred,

respectively, whether or not such transactions have been settled finally by the receipt or payment of cash or its equivalent.

Acid test ratio - A financial ratio is calculated by Current Assets – Stock divided by Current Liabilities. By subtracting inventory and work in progress, this ratio yields a prudent measure of short-term *liquidity* since it is not always possible to convert stock into cash at full value.

Ad valorem tax - This tax is a percentage of the selling price; e.g., Value Added Tax

Administrative Bodies: a unit with managerial or organizational responsibilities. A regulatory commission could be viewed as an administrative body with oversight responsibilities for infrastructure suppliers.

Advances - Loans provided by a financial institution.

Adverse selection –When the operator has private information about its innate ability to perform well or about its customers, this is called *adverse selection* because the operator has an incentive to tell the government that the situation is worse than it really is when the government is deciding the rules under which the operator will provide service.

Advisory Bodies: Some regulatory commissions have established groups that provide input regarding sector performance. These boards are generally consultative bodies that obtain feedback from consumer groups.

Affiliate - A person or organization associated with another person or organization. In business, the word often refers to corporate partners.

After-tax cost of debt - When interest payments are included as a business expense before calculating profits for income tax purposes, the stated cost of debt (interest rate) is a before-tax number (such as .10). Thus, if the tax rate is 40%, the after tax cost of debt is less than .10, since higher interest expenses reduce the borrower's tax bill. So in this example, the after tax cost of debt would be .06.

Agency problem - A problem arising from having agents contracted to control others' resources for others' benefit; e.g., directors, managers, and employees contracted to protect and maximize stakeholders' assets. "Agency costs" can result from insufficient safeguards for these assets or inadequate governance procedures.

Agency Structure: An organizational chart of the agency's sections and lines of responsibility provides a view of the formal links within a commission. In addition, there are generally brief descriptions of roles of the various divisions, along with the names and titles of staff. Sometimes the structure is established in a law. In other cases, the structure can be modified by the agency leadership in response to changing industry conditions.

Aggregator(s) - One who assembles a group of buyers or sellers, in contrast to a marketer who represents a group of buyers or sellers.

Allocative efficiency - A situation where production is at least cost (*production efficiency*) and price equals *marginal cost*. As a consequence, marginal benefits to consumers who purchase the product are equal to the *opportunity cost* of supplying it. The resulting mix of products and levels of production yield maximum benefits, given the production technology, available inputs, and consumer preferences and incomes.

Alternative dispute resolution (ADR) - A substitute for litigation (adversarial lawsuit) as a way for establishing regulatory rules or reaching consensus on decisions. ADR provides a means to settle disputes without recourse to the formal judicial system. The process could involve negotiated settlements among the parties potentially affected by a ruling. There could be mediation, where one party assists in settling differences among contending parties. Such approaches can represent a less expensive and speedy mechanism for reaching agreement than participating in a formal hearing (where there seem to be winners and losers) or engaging in a contentious appeals process.

Alternative electric supplier (AES) - A term that can be applied to competitive suppliers of retail electric services.

Amortization - The act or process of recovering a capital cost through a specified number of recurring payments.

Ancillary services - Services related to the stability of an electrical system; e.g., generation of reserve capacity, regulation of voltage.

Anti-competitive behavior - Behavior that protects a firm's market power or position, such as *predatory pricing*.

Appeal bodies - Entities identified in the law who are available to parties affected by a regulatory ruling. The entities can review the decision, and determine whether it was consistent with the legal mandate given the regulator. Generally, such appeals are evaluated on the basis of whether the regulator followed due process that developed the factual basis necessary for reaching a decision.

Appreciation - The rise in value of an asset.

Arbitrage - A quick purchase in one market and sale in another to benefit from different price structures or changes in prices.

Asset(s) - Owned value; the items on a *balance sheet* showing the book value of property owned.

Asset-transfers - Upon the sale of a company, control of its assets is given over to the purchasing party. When assets are moved between divisions of a corporation, regulatory authorities will *monitor* the transfers, since the sale can have implications for regulated prices.

Auction: Any of a number of methods for determining sales price. Interested parties place bids and the highest bidder obtains the item if the bid is greater than the reservation price (minimum

acceptable bid). Alternatively, there can be an auction for a subsidy to provide a service (say, to a high cost, un-served geographic area); in such cases, the lowest bid wins the subsidy. There are a number of different types of auctions with a variety of characteristics, including Dutch auctions and second price auctions (see Vickery auction).

Authorized payment location - A location other than the utility business office where bills can be paid.

Average cost pricing - Setting prices according to average costs.

Average costs - *Total cost* divided by level of output yields the average cost for each unit produced; this usually appears as a u-shaped average *cost curve* as returns increase to the point of diminishing returns.

Average fixed cost (AFC) - This *variable* is calculated by dividing total fixed cost by total output produced. AFC declines as output increases, spreading *fixed costs* over a greater number of units produced. Average Fixed Cost plus *average variable cost* equals *average total cost* for any particular output level.

Average rate of return - This method of appraisal measures the net return from an investment as a percentage of its original cost.

Average revenue - *Total revenue* divided total output.

Average tax rate - In the case of income taxes, the total tax bill divided by the total income. This can differ from the *marginal tax rate* because of progressivity in the tax rate, exemptions, or other factors.

Average total costs (ATC) - See *average cost*

Average variable cost (AVC) - The total variable cost divided by total output.

Averch-Johnson effect (AJ effect) - Named after two economist who developed a stylized model of the rate-of-return regulated firm. They found that when firms are subject to rate-of-return regulation, if the allowed return is greater than the required return on capital, the firm will tend to over-invest in capacity. This incentive to increase the level of capital beyond what is needed for economically efficient production involves a number of assumptions about future allowed returns and the future cost of capital.

Avoided cost - When a unit of output is not produced, *total cost* falls. Avoided cost is the incremental cost that is not incurred when the additional output is not produced. For example, the term can refer to the cost avoided by an electric utility when another service option exists; e.g., an independent generator. Such costs can be the basis for the rates independent suppliers receive from utilities.

Backward integration - A reference to a firm's acquisition of business interests operating at a

production level preceding its own; e.g., an electricity distribution company that buys an electricity generator.

Balance sheet - A financial statement prepared annually for shareholders and stating a company's assets and liabilities. Like a financial snapshot of the company's financial situation at that moment in time, the balance sheet shows the value of the assets as being equal to liabilities plus the net worth of the company.

Banded Rate of Return Regulation: Specifies a range of returns that a regulated company is allowed to earn before profit or loss sharing sets in. This approach provides greater incentives to the company to keep costs down than a system that establishes caps on returns, since costs tend to drift up if all savings are immediately passed on to customers.

Bandwidth - The capacity of a *telecommunications* line to carry signals.

Bargaining: Activity that involves negotiating an agreement that is acceptable to parties to a contract or an accord.

Barriers to entry - Factors that make market entry extremely costly for outside firms. Factors as diverse as political restrictions or patents can discourage potential entrants, particularly since established firms in an industry already have a variety of advantages.

Base rate - The interest rate that banks and other *financial institutions* use as a basis for all their other rates; i.e., interest paid for loans will be above this rate while the interest on savings accounts will be below it.

Base year - The 12-month period in which calculations are made for comparison with other years.

Bearer Services - Telecommunication services that provide the necessary capacity to transmit between specified access points.

Benchmarking - A means of quantifying the relative performance of companies or divisions (such as regional distribution companies). Summary performance indicators, such as output per worker, are often used to identify trends, determine baselines, and identify reasonable targets—based on a sample of comparable firms. Performance scores can also be based on more comprehensive production or cost models, using econometric or data envelopment analysis. Studies vary in levels of sophistication and ease of interpretation, but all can provide important information regarding the relative performance of firms who face comparable production conditions. Another approach, process benchmarking, involves detailed analyses and comparisons of company operating characteristics in the vertical production chain. In addition, customer surveys are often used to monitor customer perceptions regarding service quality, reliability, and responsiveness to customer complaints. See *yardstick regulation; competition; comparative; efficiency measurement*.

Bertrand Model - A model of *oligopoly* featuring firms producing a homogeneous good and deciding simultaneously and separately on the price to charge.

Beta - The co-efficient representing the degree of correlation between stock market returns as a whole and the returns on a company's shares. In the *Capital Asset Pricing Model*, the higher a firm's beta, the greater the *systematic risk* of an investment in that firm's *shares* (a beta coefficient of 1 implies that the firm is of average risk).

Bidding: To make an offer of; to propose. Specifically: To offer to pay (a certain price, as for a thing put up at auction), or to take (a certain price, as for work to be done under a contract).

Bilateral contract - A legal commitment for one party to purchase and another party to sell; for example, a direct contract between a power producer and a user or *broker* who is outside a centralized power pool.

Bilateral monopoly - A market that has only one seller (*monopolist*) and only one buyer (*monopsonist*).

Billing cycle - The time period during which a utility calculates customer service use and delivers a bill stipulating a due date for payment.

Billing surcharge - An additional percentage *mark-up* on the total bill, reflecting authorized modification to the published tariff. Such a surcharge may be used as a transparent *subsidy* for other groups of consumers or to cover costs incurred to meet an unusual circumstance (such as storm damage from a particularly violent hurricane).

Billing unit - Phone companies measure and price long-distance calls in billing units, usually one minute, with charges rounded up to the next unit on completion of the call.

Bonds - A means of revenue-raising on the part of companies and governments by issuing debt instruments at a given interest rate and maturity date.

Bottleneck facility - A point on a network (such as a power system) through which all service products (like electricity) must pass to reach the ultimate buyers. When there is limited capacity at this point, decisions are necessary to prioritize deliveries (allocate capacity) and determine whether to build additional facilities to relieve the constraint.

Bottom-up approach (to modeling of costs) - Calculating costs by identifying and totaling the expenses associated with inputs (labor, equipment, etc.) used to produce a given level of output for a product or for an entire product line.

Brand loyalty - Consumer preference for a particular brand, reflected in a reluctance to switch suppliers.

Break-even pricing - The price at which a firm makes no profit but suffers no loss and so breaks even: *total revenue equals total cost*.

Broadband - A service or connection that allows a considerable amount of information to be conveyed, such as television pictures. Generally defined as a *bandwidth* > 2Mbit/s.

Broker - An intermediary in the vertical chain of production. For example, a retail agent in the energy sector who buys and sells power; may also arrange for transmission and other services.

Brownout - A circumstance of reduced supply of electrical voltage, particularly during times of high demand. The result is a dimming of the lights and potential damage to sensitive electric appliances.

Budgets: An itemized forecast of an individual's or company's projected income and expenses for some period in the future.

Building societies - *Financial institutions* that specialize in mortgages for home buyers.

Bulk power supply - Wholesale supply of power in bulk quantities.

Bundled service - Including a variety of services in combination. In telecommunications, international service could be combined with local calls. In electricity, the supplier might combine generation, transmission, distribution, and related customer service and support functions as a combined service.

Bypass - Delivering a network service without using (and paying for) a link that is typically used for service provision. For example, telephone service might bypass the local company's central office and connect directly with a long-distance company.

Cable - A bundle of paired wires that carry multiple telephone connections or circuits.

Call termination - The activity that involves signals reaching the telephone number designated as the destination.

Calling plan - An option that allows people to save money on telephone calls to certain areas at particular times of day.

Capacity - Plant and equipment that determine the *potential output* of a production facility.

Capacity charge - (sometimes referred to as the “demand charge” or “system use charge”) Based on the maximum amount of electricity used at a given time, the capacity charge is assessed according to the peak demand and can be one factor in a two-part pricing method used for cost recovery. (*Energy charge* is the other factor.) When metering does not identify the time of the system, peak, the customer's own peak kW demand is used for billing purposes.

Capacity release - When a customer is not using all of the capacity contracted for, capacity release allows a secondary market for capacity.

Capacity-based charging - Using the cost of the necessary capacity for providing service as the basis of charges.

Capital - Manmade, as opposed to natural, resources (e.g. equipment, buildings); a factor in production.

Capital Asset Pricing Model (CAPM): A financial model for valuing stocks or other assets by relating risk and expected return. Risk is defined as the non-diversifiable market risk associated with the asset. In the case of stocks, a portfolio of all stocks has a “beta” of one: where “beta” is taken to be the measure of risk.

Capital employed - Capital Employed may be defined in a variety of ways, the most common being Fixed Assets plus Working Capital (Current Assets less Current Liabilities).

Capital expenditure - Also referred to as investment; annual capital expenditure is spending on equipment, including buildings and machinery.

Capital gains - The difference between the initial cost of an asset and its later sale price or economic value. For a stockholder, the capital gain is the difference between the stock sale price and its purchase price.

Capital markets - Markets that facilitate the issue and trading of financial securities (equity, bonds, and other instruments)

Capital-intensive - Economic activities requiring a high proportion of capital in relation to labor and other variable outputs.

Captive customer - One without realistic purchase alternatives. In the energy sector, such a customer buys from the local utility even when it has the legal right to buy from its competitors.

Captured agency - A government agency unduly influenced by economic interest groups directly affected by its decisions. The resulting public policies favor special interests rather than

the general public interest. E.g., a *regulatory agency* that enacts policy beneficial to favored client groups at the expense of less organized and influential groups.

Cash flow - A record of the money income received and money outflow for an organization over a given period of time.

Cellular communication - A type of wireless telephone communication made possible by cellular towers that send and receive signals, *switching* them to and from the nearest central office.

Central planning - Planning characterized by state allocation of resources in association with production goals to meet targeted growth rates.

Ceteris paribus - Latin for “other things being equal” and referring to a state that holds related factors or elements constant; e.g., supply and demand functions calculated with other factors held constant.

Chain of production - The different stages involved in producing, distributing and selling a good or service.

Chain-weighted price index - A *cost-of-living index* that takes changes in quantities of goods and services into consideration.

Citizens Charter - In the U.K., a program (initiated in the 1990s) requiring that public utilities specify performance standards, determine consumer rights, responsibilities, and remedies, and pay fines when performance targets are not met by utilities. The program represented an attempt to increase *accountability* for utility suppliers, with regulators monitoring performance to ensure that citizen input is given adequate attention.

Cogenerator - A generator that, while producing products (heating services or chilled water) also produces electricity as a by-product.

Collective bargaining - Negotiations between trade unions and employers regarding wages and working conditions.

Collusion - Secret cooperation between firms to limit competition; considered more likely in an oligopolistic market structure.

Collusive oligopoly - Illegal agreement among a few large firms in an industry to set price or restrict output.

Co-location - Use of the *local loop* to supply telephone service by operators other than the wire owner.

Command-and- control regulation - Regulations imposed by government that mandate how demand should be met through the use of particular production technologies, including pollution

controls. In contrast, other approaches focus on establishing incentive for efficiency. For example, emissions trading regimes tend to promote more cost-effective control strategies.

Commercial bank - A financial institution that offers a variety of services, including savings and loans.

Commercialization - This process refers to programs and activities that either increase the value or decrease the cost of operations, often through integrating new products or services into the production process. Such activities could accompany *corporatization* (including the establishment of prices that reflect costs and targeted - rather than general - subsidies).

Commitment: An agreement to perform a particular activity at a certain time in the future under certain circumstances. (also see the definition of capital commitment, firm commitment offering, loan commitment, forward commitment)

Commodity markets - Increasingly global markets for trading commodities (e.g., coal, oil, metals, precious metals, etc.).

Common carrier - One that provides infrastructure services to the public, subject to regulation.

Common costs - Those incurred in making a group of products or services available. The costs cannot be directly attributed to any one product or service.

Comparable performance indicators - Quality-of-service indicators for directly comparable attributes of firms.

Comparative advantage - A benefit of specialization, such that a company is able to produce a good or service at a lower cost than others. In the case of nations, producing products with low opportunity costs is a basis for trade to obtain for goods and services best produced by others.

Comparative costs - Data on the costs of comparable activities are collected and used for evaluating the relative performance of two organizations.

Compatibility – Interoperability of related systems, often achieved through the adaptation of technical standards.

Competition - Competition tends to come in two varieties: competition among the few (a market with a small number of sellers or buyers, such that each can exercise some degree of market power) and competition among the many (*Perfect competition*--a market with so many buyers and sellers that none is able to influence the market price or quantity exchanged).

Competition policy - Government policy that promotes competition and efficiency. This policy is usually reflected in antitrust laws.

Competition, comparative - See *yardstick regulation*.

Competition, emerging - The development of new competitors in the early stages of *competition*.

Competition, franchises - A *franchise* defines service territories (and associated service obligations) for a supplier. A government agency could put a *franchise* up for bid (competition for the market).

Competition, laws - Antitrust Laws that define the jurisdiction of government bodies, as well as the market structures and types of behavior that reduce the benefits from having multiple decision-makers in a market.

Competition-based pricing - Setting price according to what the competition is doing or planning.

Competitive advantage - The advantage a firm with a lower cost structure has over rivals since it can sell at a lower price or make a greater profit at the same price.

Competitive conditions - Characterized by the number and size distribution, firms, entry conditions, and extent to which production differentiation (or branding) limits price rivalry. See *market structure*.

Competitive markets - Markets with competitive conditions: large number, suppliers, easy entry, and relatively homogeneous products.

Competitive tendering; see also Tendering - Putting a license or activity up to bid. There is usually a well defined schedule identifying the date for meeting certain requirements; these include the provision of information and the actual bid. Considerable attention is given to due process and to transparency.

Competitive Transition Costs - *Transition costs* are *stranded costs* charged to utility customers as a fee or surcharge once an asset is sold or separated from a vertically integrated utility. Such charges can be viewed as the political price for moving to a new and more efficient market structure. See *stranded costs* and *stranded assets*.

Complaint: An expression of dissatisfaction. When evaluating the performance of infrastructure companies, customer complaints are one index of service quality. Formal reporting systems provide records of customer concerns and company responses.

Complementary demand - Demand for associated goods or services that increases in tandem; i.e., an increase in demand for one creates an increase in demand for the other.

Complementary goods (or products) - Associated consumer goods and services; e.g., cars and gasoline. One indication that goods are complementary is the *cross-price elasticity of demand* (CPED). If CPED is negative, the goods are complements; if CPED is greater than zero, the goods are close substitutes: a decrease in the price of product A causes a decrease in the quantity demanded of product B.

Compliance cost assessment - An evaluation of costs associated with meeting regulatory rules and standards

Concentration ratios - An indication of proportionate *market share* among firms in an industry, measured with revenues or outputs. A four-firm concentration ratio of 65% would indicate that the four largest firms had a total *market share* of 65%.

Concentrator - The part of the local exchange which is positioned close to the customers. It is sometimes within the local exchange and sometimes located remote from the local exchange.

Concession: A franchise for a specified period of time, wherein the concessionaire takes on certain obligations—such as meeting network expansion targets or delivering a service at a regulated price. The associated contract establishes the mutual responsibilities for the parties involved.

Concessional terms - A loan at more favorable terms than is available commercially. A large proportion of aid to developing countries takes the form of loans at concessional terms.

Conditional access - Access restricted to paying customers by various systems and technology; e.g., use of scrambling to prevent unauthorized access to paid television.

Conflicts of Interest: a situation in which a public or private official's decisions are influenced by the official's personal interests. Examples include self-dealing, accepting (secret) side-payments for making a decision, use of public property for private advantage, inappropriate use of confidential information, and outside employment with someone affected by the decision. If a decision-maker has a personal interest in the decision, he or she should not take part in the deliberations.

Conservation cost recovery charge - A component added to an electricity bill to cover the costs of utility outlays that reduced the demand for electricity. Conservation programs might include *energy efficiency* audits, *weatherization programs*, or efficient lighting systems. Some regulatory oversight would be called for to ensure that the programs are, indeed, achieving the conservation impacts that are sought.

Consumer surplus - The “surplus” benefit received by consumers: the area under demand and above price (customer willingness to pay less outlays)

Consumer: An individual who buys products or services for personal use and not for manufacture or resale.

Contestable market - A market with low sunk costs: entry costs are low or can be recovered on exit (by salvaging the equipment and reselling or re-using it). *See also: Theory of Contestable Markets*

Contract - A binding agreement between two or more persons or parties that is usually legally enforceable; e.g., for delivery of goods or services at an agreed price.

Contract path - An arrangement for power transfer between systems. When utility systems interchange power, the transfer is presumed to take place across the “*contract path*,” the most direct physical transmission between two interconnected entities, even though the power flows according to network conditions.

Contract regulation - See *regulation by contract*.

Contracting out - Outsourcing particular activities, so as to lower the costs of delivering the final service. For example, a regulatory commission might hire external consultants to address highly technical issues when such specialized services are only required on a periodic basis.

Contracts for Differences (CfD) - A type of *bilateral contract* that allows the electric generation seller to be paid a fixed amount over time as a combination of the short-term market price and an adjustment with the purchaser for the difference. For example, a generator may sell power to a distribution company power for ten years at 6/kWh. That power is bid into Poolco at some low /kWh value (to ensure it is always taken). The seller then gets the market clearing price from the pool and the purchaser pays the producer the difference between the Poolco selling price and 6/kWh (or vice versa if the pool price should go above the contract price).

Contribution pricing - Setting price greater than the *variable costs of production* so that a portion of revenues go towards *fixed costs*.

Controllable Costs/Non-controllable Costs: A cost is considered controllable at a given level of managerial responsibility if that manager has the power to incur it within a given period of time. It follows that (1) most costs are controllable by top management because of the broad range of its activity; (2) fewer costs are controllable as one moves to lower levels of managerial responsibility because of the manager’s decreasing authority. In addition to costs that are noncontrollable due to lack of managerial authority, non-controllable costs may be incurred to meet unusual or unexpected circumstances. For example, provisions can be included in futures contracts in an effort to control such costs. However, a once in a hundred year hurricane would be viewed as creating non-controllable costs.

Convergence - Bringing together. In energy, electricity and national gas markets becoming closely linked. Similarly, with digitalization, computing and communications activities are difficult to distinguish, thus affecting regulation of traditional telecommunications.

Cooperatives - Public utilities that provide service on a not for profit basis to a group of consumers. Rural cooperatives have provided electricity, telephone, and other services to citizens areas with low population density.

COPT (customer-owned pay telephone) - A *pay phone* owned by a person or business other than a phone company; a private pay phone. See also *COCOT*.

Corporatization - Separating a state-owned enterprise from a government ministry, which leads to its becoming a stand-alone entity. The process should yield clear information regarding its *balance sheet* and income statement. The process can be a step towards *privatization* or just a

way to improve transparency with respect to the firm's operations.

Corruption: Behavior characterized by lack of integrity or dishonesty; for example, susceptibility to bribery. Similarly, use of a position of trust for dishonest gain represents an abuse of authority. Such behavior would be seen as an extreme form of conflict of interest

Cost - In accounting, an outlay for the purchase of a productive input or an allocation of an investment across time periods (Depreciation). Other costs include Wages, Salaries, and Materials. In economics, the *opportunity cost* is the highest valued alternative as the result of a choice. An *opportunity cost* sometimes involves some form of payment, like a wage. However, the existence of an *opportunity cost* does not depend on of any actual cash outlay.

Cost attribution - Determining how different inputs and activities affect the outputs of a firm, so as to derive prices based on cost causation.

Cost curve - One that plots costs (total, average, or marginal) on the vertical axis against output (on the horizontal, or *X-Axis*).

Cost function - The relation of production cost to level of output and other variables that can be controlled by the firm.

Cost of capital - The rate of return available on securities of equivalent risk in the capital market. Investors usually require compensation for risk, so the higher the investment risk, the higher the cost of capital. If a firm is financed by both debt and equity, its cost of capital is a weighted average of the cost from both sources. Investors are interested in the after-tax returns, so taxes are taken into account when calculating the *weighted average cost of capital*.

Cost of capital estimation - A variety of methodologies are used to calculate the cost of equity capital and the other sources' of funds. See *cost of capital*.

Cost of living - The general level of prices, usually measured by the retail price index.

Cost reflective (cost causality) tariffs - See *cost-based pricing*.

Cost subadditivity – For a single or multi-product firm, cost subadditivity implies that the output level (or output bundle) is produced at least cost by one firm. *Economies of scope* is a restricted form of subadditivity, by considering the extreme cases of comparing the costs of two firms that specialize in the production of different outputs, versus one firm that produces two products at the comparable output levels.

Cost, cross- subsidization of - See *cross-subsidy*.

Cost-axiomatic pricing - When the allocation of shared or overhead costs can have a significant affect on the *relative prices* for different services or customers, the application of a set of first principles (or axioms) can be developed to establish upper and lower limits on those allocations.

Analysts have developed different sets of principles that affected parties can understand and affirm as being fair and/or reasonable.

Cost-based pricing - Pricing goods and services according to their respective costs.

Cost-benefit analysis - An assessment of the *social costs* and benefits of an investment project or of a public policy.

Cost-effectiveness analysis - Finding the least-cost method of achieving a given economic or social objective.

Cost-of service regulation - A form of regulation that determines prices based on the costs of serving different customers and producing different services. The procedure is sometimes criticized for not providing strong incentives for cost containment. See *rate of return regulation*

Cost-of-living index - A comparison of present prices for a typical bundle of goods versus the prices during a base period.

Cost-oriented pricing - See *cost-based pricing*

Cost-plus pricing - When a firm adds a given percentage *mark-up* to average cost.

Costs of production - *Total cost* is comprised of both *fixed cost* and *variable costs*. *Total costs* can also be divided into direct and indirect costs. See *cost*.

Cramming - Adding services and charges to a customer's bill without the customer's knowledge or consent.

Cream-skimming - When prices are regulated, some prices may involve high mark-ups over cost for particular customer groups. Potential entrants will target those customers who currently face high prices (relative to the costs of serving them). Entrants will "skim the cream."

Credit-rating - A designation by a financial institution (such as Standard and Poor's) regarding the credit-worthiness of a company or government organization issuing bonds.

Critical value(s) - The threshold for deciding the outcome in a statistical test of a null hypothesis, dependent on the significance level at which the test is conducted and whether the test is one- or two-sided.

Cross-elasticity of demand - Equals the percentage change in quantity-demanded for product A divided by the percentage change in the price of product B. If this is positive, product A is a substitute for product B, since an increase in the price of B causes an increase in the quantity-demanded of A. If negative, product A is complementary to product B rather than a substitute for it: an increase in the price of B causes a decrease in the quantity-demanded of product A.

Cross-subsidy - Pricing below *incremental costs* in one market and covering those losses out of the positive cash flows from another market. Journalists sometimes label differential mark-ups above *incremental costs* as involving cross-subsidies, but such *price differentiation* may reflect demand elasticities, such that both customer types are contributing to covering joint costs.

Current Cost: An accounting convention, where a company's assets are valued and depreciated according to their current replacement cost while its operating or financial capital is maintained.

Current ratio - A ratio generated by dividing current assets by current liabilities. To be a good index of financial strength, all of a firm's current assets must be able to be converted into cash immediately to meet all current liabilities. The current ratio is a general test of a firm's ability to meet its short-term financial commitments.

Customer - Anyone purchasing a commodity or service.

Customer charge (sometimes referred to as a service charge) - A recurring charge for the basic administrative activities associated with a utility customer's account: billing, metering, and meter reading. In most cases, a monthly customer charge is one component of a customer's *minimum charge*.

Customer classes - Groupings of customers into categories with similar characteristics (e.g. residential, industrial, commercial, government)

Customer premises equipment - Equipment, like a telephone, located at a consumer's home or office that is not part of the *public telecommunications network* but is directly or indirectly attached to it.

Customer Value: Perceived benefits minus perceived sacrifice (as in consumer outlays for a product). This net value would be consumer surplus.

Data transmission - Information transfer between locations.

Deadweight loss - Measure of economic inefficiency following misallocation of resources from producing too little or too much of a product. Total *economic welfare* is maximized when price is set at marginal cost, achieving *allocative efficiency*.

Debentures - Long-term, fixed-interest loans to companies in the form of *bonds* backed by a company's general credit rather than a specific lien on particular assets.

Debt: A liability or obligation in the form of bonds, loan notes, or mortgages, owed to another person or a company and required to be paid by a specified date (maturity).

Decatherm - Ten therms or 1 million BTU. One *decatherm* is equal to approximately 1,000 cubic feet of natural gas.

Decommissioning - Taking a nuclear facility offline with termination of its license. The owner is then responsible for making environmental investments that reduce residual radioactivity to a level that permits unrestricted use of the property.

Decoupling - A regulatory process for determining *total revenue* a utility needs to recover utility costs. Allowed revenues differ from those derived from actual sales. The process is advocated by conservationists to limit incentives for suppliers to expand sales to increase profit. See *revenue cap*.

Decoupling of revenue and output - See *revenue cap*.

Decreasing returns - When the addition of a variable factor of production results in a fall in marginal product. The result of a firm's expansion of output in the short run where capacity is fixed. At some point, *diminishing returns* sets in. In an extreme situation, total output could even decrease with the additional used of variable inputs, as when additional fishermen on a small boat cause confusion that reduces the daily catch.

Decreasing returns to scale - Reflects an expansion of all inputs--a long-run phenomenon if output increases by less than 10% when all inputs increase 10%, there are decreasing return of scale.

Decreasing-cost industry - One with a downward sloping long-run supply curve.

Deep discounting - A sales practice that offers a significant reduction in price following purchase of an initial volume of output.

Deflator - See *GDP deflator*.

Degree day - There are two types, heating-degree days and cooling-degree days, both reflecting the extent to which a daily temperature falls below or rises above an assumed base, usually 65 degrees Fahrenheit (in the United States). Temperature forecasts can assist in predicting energy consumption for heating and cooling.

Demand - In graphical terms, it shows how quantity demanded depends on price. More generally, it reflects consumer preferences and ability to pay. Measured over a given time period, demand is determined by income, tastes, and the price of complementary and substitute goods, among other factors.

Demand curve - The amount of a product that consumers are willing and able to buy at various prices as shown on a graph. A normal demand curve is downward sloping because quantity demanded will fall as price rises, assuming consumers have a fixed income.

Demand curve, movements along - Movement along a *demand curve* as price changes. Such movements are to be distinguished from Shifts in Demand due to changes in income or other factors.

Demand side management - Conservation measures to limit or reschedule electricity use so that the size and number of generating facilities can be reduced; also used to design strategic load growth.

Demand, annual maximum - The greatest demand within a prescribed interval in a calendar year. For example in electricity markets, this might be over a 15 minute period.

Demand, annual system maximum - The greatest demand on a system during a prescribed interval in a calendar year.

Demand, average - Average demand for a system is determined by dividing the total consumption by the number of units of time in the interval, e.g. telephone calls per month, or kWh per day.

Demand, billing - The demand specified in a rate schedule or contract for which a customer is billed.

Demand, charge - That part of the bill for electric service based on instantaneous consumption and billed according to an applicable rate schedule, as with kW demand charges.

Demand, coincident - The sum of two or more demands that occur in the same demand interval.

Demand, instantaneous peak - That demand recorded at the instant of greatest load in an electric utility.

Demand, law of - The lower the price of a good (or service), the greater the quantity demanded, other factors being held constant.

Demand, maximum - The greatest demand within a specified time period, such as a billing period.

Demand-based pricing - Prices set according to customers' willingness to pay.

Demerit goods - Products valued by individual consumers that may harm consumers; e.g., alcohol and tobacco.

Demographics - The study of population trends, including family size, urban/rural living patterns, and the age distribution.

Dependability: An attribute of any system that consistently produces the same results, preferably meeting or exceeding its specifications.

Depreciation - Charges made against income to provide for distributing the cost of depreciable plant less estimated net salvage over the estimated useful life of the asset. Depreciation is not a cash outlay, but an accounting tool for allocating cost over the service life of the physical asset.

Deregulation - Removal of controls in a particular market to improve its economic efficiency; generally considered a supply side policy.

Derivatives - In the energy sector this generic term refers to specialized securities including options, futures, and forwards.

Derived demand - When goods and services are associated (e.g., cars and gas), increases and decreases in demand are associated, the secondary demand being derived from the initial one.

Detailed Valuation Methodology (DVM) - An explanation of how current cost valuations are derived.

Developed countries - Those with high levels of real per capita national income and comparably large tertiary (service) sectors.

Developing countries - Those with low levels of real capita national income but relatively large primary sectors (agriculture and natural resources).

Deviation - The difference between expected and actual outcome.

Dial tone - The signal heard when a telephone receiver is picked up as an indication that the phone is connected to the telecom system and can be used.

Differentiated products - Goods or services that are distinguished from rivals by various means; e.g., packaging, advertising, or quality.

Digital Subscriber Line (DSL) - A regular telephone line transformed into a high-speed digital line via a family of technologies referred to as DSL or xDSL. These lines can support fast Internet access with video and TV on demand. Includes ADSL (asymmetric DSL), SDSL (symmetric DSL), HDSL (high data rate DSL) and VDSL (very high data rate DSL).

Digital Subscriber Loop Multiplex (DSLAM) - DSLAM is composed of a multiplex and the DSL modems necessary to operate DSL services over the loops served by the operator from the exchange.

Digital transmission - Communication using binary data to send voices, pictures and other information over telephone lines. Digital transmission has much more capacity than the traditional analog format.

Diminishing returns - See *decreasing returns*.

Direct access - The ability of retail customers to purchase electricity directly from the wholesale market rather than through a local distribution utility. See also *retail competition*

Direct connection - An optional telephone service that automatically connects with a designated number when the receiver is lifted; no dialing is needed.

Direct costs - All production costs attributable to a good or service (reflecting cost-causation).

Direct Load Control (DLC) - When a utility signals a customer appliances to stop operations (to reduce the demand for electricity). Such rationing generally involves a financial incentive for the affected customer. See *Load Management*.

Directory - A listing of telephone numbers and names. See *yellow pages* and *white pages*.

Directory assistance - A telephone company service that finds numbers for callers; also called “information.”

Directory Assistance System (DAS) - An operator-assisted directory service.

Disaggregation - The functional separation of a vertically integrated utility into smaller units (i.e., generation, *dispatch/control*, transmission, distribution). Also referred to as “deintegration” and “disintegration.” See also *divestiture*.

Disbursement - Funds paid out.

Disclosure regulation - Regulatory requirements regarding *disclosures*. This term can also refer to transparency regarding *affiliate* transactions.

Disclosures - Printed information about conditions, fees, risks, etc.

Disconnection - Terminating telephone service; also, any interruption that ends a call.

Disconnection notice - A warning that service is scheduled to be turned off.

Discount plan - An optional plan that features a lower price for a particular service. Designed to lower bills but also limiting usage.

Discount rate - The comparative value of a dollar at some future time and its present value.

Discounted cash flow - A method of *investment appraisal* that considers the timing of receipts and payments. Since returns from investment always arrive in the future, discounted cash flow techniques use a “discount rate” to determine their present worth.

Discriminating monopoly - A monopoly supplier that charges different prices to different customer groups, based on different price elasticities. See *price discrimination*.

Diseconomies of scale - Increases in long-run *average costs* accompanying an increase in the scale of production.

Diseconomies of scope - Multi-product production by a single firm that is less efficient than having separate firms each specializing in the production of a single product.

Disequilibrium - A state of imbalance in which there is tendency for change. For example, *excess demand* is a disequilibrium situation leading to a tendency for prices to rise.

Dispatch, Dispatching - The control for an integrated electric system to schedule transactions with other interconnected electric utilities and assign generation to specific generating plants and other sources of supply to effect the most reliable and economical supply as the total of the significant area loads rises or falls. The activity has implications for operations and maintenance of high-voltage lines, substations and equipment, including administration of safety procedures.

Distributed Generation - Generating small amounts of energy to meet local (substation level) peak loads, thus displacing the need to upgrade or build additional local distribution lines.

Distribution - The act or process of delivering electric energy from convenient points on the transmission system (usually a substation) to consumers.

Distribution channel - The organization necessary to distribute goods or service, e.g., distributors, wholesalers, and retailers are each stages in the distribution process.

Distribution Company - A utility company that is responsible for maintaining and operating a distribution system and providing other services to end-use customers. See *distributing utility*.

Distribution line - One or more circuits of a distribution system that operate at relatively low voltage in comparison with transmission lines.

Distribution of income - The way income is allocated among households. For example, the lowest twenty percent might receive ten percent of the total income. The term can also refer to allocation between factors of production.

Distribution service - The network of wires and equipment that carries electric energy from the transmission system to the customer's premises.

Distribution utility (Disco) - The electric utility entity that constructs and maintains the distribution wires connecting the transmission grid to the final customer. It can also perform other services such as aggregating customers, purchasing power supply and transmission services for customers, and billing customers and reimbursing suppliers. See *Distribution Company*.

Disutility - When total satisfaction falls as additional units of a good are consumed. For example, additional risk produces disutility for most investors, leading to risk aversion.

Diversifiable risk - Risk that can be eliminated by particular actions. For example project-or firm-specific risk can be eliminated either by investing in many projects or by holding the stocks of many companies.

Diversification - An increased range of goods or services provided by a firm.

Divestiture - Separation of utility functions for the purpose of changing the ownership of the assets related to the functions. For electricity, the most common form is spinning off the generation assets so they are no longer owned by the shareholders who own the transmission and distribution assets. See *disaggregation*.

Division of labor - Breaking down production into its components and distributing tasks among different persons, groups, or machines to increase efficiency. In conjunction with specialization, such activity promotes productivity.

Dominant carrier - A telecom company with sufficient *market share* to play a major role in determining rates.

Dominant firm - A firm able to act relatively independently of its competitors in terms of pricing or output decisions. Dominance has to be assessed within the context of the degree of competition in a relevant market. For example, a dominant firm generally cannot totally ignore the reactions of rival firms, including a competitive fringe. Such a firm might have a large share of total sales, which allows it to set prices to maximize profits while considering the supply response of smaller firms (the competitive fringe).

Dominant strategy - A strategy that is best (optimal) no matter what an opponent does.

Duopoly - A market dominated by two firms.

Durable good - One expected to remain serviceable for a long time.

Earnings sharing: A form of hybrid regulation. With this mechanism, the regulator allows the operator to keep some portion of the earnings it receives from selling the product or service and requires the operator to give the rest to customers, through price reductions, refunds, or increased investment in facilities or services.

Earnings: Revenues minus cost of sales, operating expenses, and taxes, over a given period of time. See net income.

E-commerce - Buying and selling online over the internet; also, using computer technology to speed up transactions and make them more efficient from production to delivery

Economic cost - Cost to a firm of utilizing economic resources in production, including opportunity cost.

Economic dispatch - Start-up, shutdown and allocation of load to individual generating units to effect the most economical production of electricity for customers. See *dispatching*.

Economic efficiency principle - Producing desired products at the least possible cost. A term referring to the optimal production and consumption of goods and services, where price equals marginal cost.

Economic goods - Products and services that are bought and sold. Other valued economic goods, like clean air, may not be amenable to market transactions.

Economic growth - An increase in a country's output of goods and services, usually measured by changes in real *gross domestic product* (GDP).

Economic rent - The difference between what a factor of production is earning (its return) and what it has to be earning to retain its present use, i.e., earnings over and above its next best alternative use.

Economic systems - Networks of organizations involved in economic activity in a society; these organizations and associated institutional frameworks affect the production and distribution of goods and services.

Economic welfare - A measure of the ways an economic system benefits its participants. For example, real per capita *standard of living* would be one index of economic welfare. The welfare generated by a project would be the Total benefits minus the *total costs* of the project.

Economies of scale - Lower long-run unit costs with an increase in production capacity perhaps attributable to larger firms' being able to buy in bulk, organize production more efficiently, and/or raise capital cheaper. The term involves making comparisons over output levels, with time allowed for capacity adjustments.

Economies of scope - Savings that result from producing two or more products or services together.

Economy rate - The least expensive rate for international telephone calls, which is available at different time periods according to the country called.

Effective exchange rate - An average exchange rate for currencies of trading partners weighted to reflect the importance of each country based on value of traded goods. It is expressed as an index number.

Effective yield (or rate of return) - The percentage return received from investment in a bond.

Efficiency - An economic goal of receiving the most satisfaction from a given amount of resources; it occurs when satisfaction cannot be increased through increased production of one good and less of another. See *allocative efficiency* and *production efficiency*.

Efficiency criteria - Rules for assessing a given allocation of resources.

Efficient components pricing rule (ECPR) – A methodology that addresses access pricing by emphasizing the opportunity cost of the integrated access provider. The relevant opportunity cost will depend on market conditions, including product differentiation, bypass, and substitution possibilities. In the most elementary situation, if the incumbent receives the same profits from

interconnection and access as it does from sales of the retail product, the competition can enter the market only if they are more efficient in providing retail functions than the incumbent.

E-government: The use of technology, particularly computer and communications developments such as the internet, digital TV and mobile phones, to modernize and improve local and national government services.

Elastic Demand: A situation where a one percent price change leads to a greater than one percent change in the quantity of a service or product demanded. Elasticity is a measure of responsiveness.

Elasticity - Responsiveness; the degree to which one variable (e.g., quantity demanded) is responsive to a change in another (e.g., price).

Elasticity of demand - Responsiveness of quantity demanded to a change in a variable such as price, the price of a substitute, or of other goods income.

Elasticity of supply - Responsiveness of quantity supplied to a given change in price.

Electric meter - A device that measures the amount of electricity a customer uses. The primary types are energy meters (measures electricity use in kilowatt-hours), demand meters (also measures peak load), interval demand meters (records use in measured time periods), and *time-of-use* meters (allows different charges for electricity used during different time periods).

Electric supplier - One licensed by a utility *regulatory agency* to provide electric generation services; the power is then delivered by the consumer's electric distribution company. The retailing activity is often bundled with metering, billing, and contracting with generators..

Electric utility- Any organization, municipality or state agency with a monopoly *franchise* that sells electric energy to end-use customers.

Electricity service - Provision of electricity via the network of generating plants, wires and equipment needed to produce or purchase electricity (generation) and deliver it to the local distribution system (transmission).

Electricity trade - Scheduled flows of active power between countries, with payment for imported energy and transit services based on signed contracts for electricity export, import, and transit.

Embedded costs exceeding market prices (ECEMP) - Cost associated with utility investment incurred pursuant to a regulatory or contractual obligation. Also costs reflected in cost-based rates that exceed the price of market alternatives. ECEM becomes "*stranded costs*" when they exceed the amount that can be recovered through the asset's sale. Whether such costs should be recovered by utility shareholders is a problematic regulatory question. *Transition costs* are *stranded costs* charged to utility customers as a fee or surcharge once an asset is sold or separated from a vertically integrated utility. See *competitive transition costs*.

Energy - The capacity for work; a reference to electrical energy among utilities and a measure of the quantity of electricity used in a given time period, measured in kilowatt-hours

Energy charge - The portion of a utility bill that reflects electric energy consumed or billed.

Energy conservation - Activities associated with reductions in energy consumption, including investments in energy efficient appliances and equipment.

Energy costs - Cost associated with the production and transmission of electricity.

Energy efficiency - Using less energy (electricity) to perform the same function. The term "energy conservation" differs since it implies "doing without", although journalists use the terms interchangeably.

Energy, off-peak - Energy supplied during times, specified by the supplier, when system demand is relatively low and, consequently, *incremental costs* are also low.

Energy, primary - Energy available from the utility's supply of power (firm power).

Energy, secondary or supplemental - Energy obtained from suppliers other than the utility (non-firm power).

Enterprise - Entrepreneurial skills, especially the ability to identify new products or markets, take risks and create profit.

Entrepreneurs - People who undertake the risks of production in anticipation of a profit.

Entry: When new firms join an industry. Entry barriers can make it difficult (or expensive) for a new firm to begin production in some industries.

Environment: The totality of surrounding conditions and circumstances affecting growth or development. Often the term is applied to the natural features of a geographic area: water, air, and land—including ecological relationships.

Environmental economics - The study of how economic and environmental issues interact, including ways to reduce pollution and analyze non-renewable resources.

Equal access - Referring to the ability of different users to obtain network services under the same terms and conditions. In the case of telecommunications, it is the ability of customers to select their long-distance telephone company and allowing all long-distance companies the same opportunity to serve phone customers.

Equilibrium - A state of balance in which there is no tendency for change. See *disequilibrium*.

Equilibrium price - Absence of either a *shortage* or surplus in a market as quantity supplied equals quantity demanded.

Equilibrium rate of interest - The interest rate at which the amount of money borrowers seek is equal to that which lenders are willing to offer.

Equities - Another word for shares, the ordinary *shares* of a public company that confer proportional ownership to the holder of equities.

Equity (fairness) criteria - The social desirability of a particular resource allocation. The reference could include *procedural fairness* (equal access to the process of reaching a decision) or *distributional fairness* (in reference to the impacts on those with different incomes—particularly on the poor).

Equity principle - The idea or concept of economic fairness. See *equity criteria*.

Essential Facility: A facility or infrastructure component viewed as necessary if a competitor is to enter a market. If potentially competitive firms do not have access to the component, the cost of duplicating the component might be viewed as prohibitive. Of course, automatically requiring incumbent companies to provide competitors access to that component at very low prices can serve as a disincentive for competitors to initially invest in creating those facilities. See efficient components pricing rule (ECPR).

Essential requirements - Conditions imposed regarding establishment, operation and/or provision of a network service. These might include security of network operations, maintenance of network integrity, data protection, environmental protection, effective use of the frequency spectrum (in the case of telecommunications), or public health standards (in the case of water/*wastewater* systems).

Ethics: Motivation based on ideas of right and wrong; the philosophical study of moral values and rules. Some principles, such as honesty or avoidance of exploitation, are widely accepted in the common moralities of many communities.

Evening rates - Rates charged by telephone or electricity companies for service after the workday ends (often 5 - 11 p.m., Sundays through Fridays). These "shoulder rates" are less expensive than daytime rates but more expensive than night and weekend rates. See *time of use rates*.

Ex parte communication - An off-the-record communication from one side or party only regarding a substantive issue in a government regulatory proceeding. The communication is directed to an official who will make a decision in the matter, so such interactions reduce transparency in the decision process.

Excess demand – The situation when consumers want to buy more than producers are prepared to sell at the current price. This leads to a tendency for price to rise unless there is some form of price control (and associated rationing mechanisms).

Excess supply – The situation when producers are prepared to sell more than consumers are willing to buy at the current price. This leads to a tendency for price to fall unless there is some

form of price control (and associated price supports).

Exchange control - Government policy affecting the amount of foreign currency available to domestic firms

Exchange economy - A market characterized by trade between consumers.

Exchange rate - The price of one currency in terms of another. Exchange rates can be fixed (value set by the government) or floating (value fluctuates according to the market). More generally the term can also refer to the price at which any good is being traded for another good.

Exchange rate parities - *Exchange rates* expressed in terms of gold, dollars or Euros.

Executive compensation - All forms of payment, including salaries, company *shares* and other indirect financial advantages, provided to CEOs and other top management.

Exempt wholesale generators (EWGs) - Created under the 1992 U.S. Energy Policy Act, EWGs are exempt from certain financial and legal restrictions stipulated in the Public Utilities Holding Company Act of 1935.

Expenses: Any cost of doing business resulting from revenue-generating activities.

Extension - An additional telephone line or outlet.

Extent of a market - Market boundaries in terms of both geography and the range of products produced and sold within an area.

External benefits - Spillover advantages of production or consumption that are free to beneficiaries; e.g., the sight of a well-kept garden. These benefits accrue to those who do not produce or purchase the product. If these are added to the *private benefits* we get the total social benefits.

External constraints - Factors that influence economic behavior but are beyond the control of a consumer or firm.

External costs - Negative spillover effects of production or consumption for which no compensation is paid, e.g., a polluted stream that damages the health of those living near the stream. If these are added to the *private costs* we get the total social costs.

External debt - The total amount of private and public foreign debt owed by a country.

External diseconomies of scale - Higher long-run *average costs* for a firm as a result of growing in size. These may stem from bidding up the prices of scarce inputs when production levels are higher (a pecuniary diseconomy).

External growth - Firm growth via acquisitions (mergers and takeovers).

External shocks - Unexpected adverse changes from outside a given economy; e.g., a war or commodity price shock.

Externalities - Spillover effects of production or consumption for which no payment is made. These can be positive or negative; see *external costs* and *external benefits*.

Factor cost - The price of an input used as a factor of production. The term can also be used to denote the value of output measured in terms of the cost of the *factors of production* used to produce it.

Factor market - The market for selling and buying resources needed for production; e.g., labor and capital.

Factor mobility - The ability for inputs to move (geographically or across firms or sectors) or be used in alternative productive activities (e.g, labor mobility).

Factors of production - The resources necessary for production, usually classified as land (all natural resources, including minerals and other raw materials), labor (all human resources), capital (all manmade resources), and enterprise or entrepreneurial skills. An economy's rate of growth is clearly affected by the quantity and quality of its factors or production.

Fair Value: A valuation, in accordance with standard methodology, that is viewed as reasonable to all parties involved in a transaction. The value would be dependent on all pre-existing conditions and expected circumstances.

Fairness, distributional outcome - See *equity*. The term is used in reference to the impacts on those with different incomes—particularly on the poor.

Fairness, procedural - The extent to which procedures are developed following due process, where procedures are transparent and public participation is facilitated; such clarity and accessibility characterizes open regulatory processes. Hearings or meetings are well publicized and arbitrary behavior by the regulator is unacceptable.

Fiber optics - A communications technology that permits light to travel through hair-thin glass fibers and that increases the *data transmission* possible within a cable of small diameter.

Field trials - Testing of a product with a small group of consumers to gauge its effectiveness or the best marketing approach.

Final customer (end user) - A family or organization buying a service (such as electricity) for its own use.

Financial economies of scale - The ability of large firms to borrow money on more favorable terms than small firms.

Financial institutions - Firms or organizations offering a range of financial services, including

loans, deposits, and trading opportunities.

Financial intermediaries - Those channeling funds between people and institutions wanting to lend money and those wanting to borrow. Such organizations can package or aggregate financial products.

Financial statements - The collection of a firm's accounting information including *income statement*, *balance sheet*, and *statement of cash flows*. These are audited to verify appropriate separation of lines of business for compliance with regulations prohibiting unfair cross-subsidies and requiring that charges be derived fairly from costs and applied without discrimination.

Firm obligation - An electric utility's commitment to supply energy or make capacity available during a specified time period.

Fixed costs - Production expenses that are independent of the level of output; e.g., administrative overhead, loan repayments.

Fixed input - A production factor that cannot be varied in the short run.

Fixed interest securities - Investments that pay a fixed annual rate of interest, such as *bonds* issued by firms or governments.

Fixed proportions production function - One requiring a definite and unvarying combination of labor and capital to produce each level of output. There are no trade-offs possible (use of less labor and more capital still reduces output).

Fixed publicly available telephone services - Basic telephone service (national and international calling, emergency and information access but no value-added options) made available to end users at fixed locations.

Fixed-weight index - A *cost-of-living index* with quantities of goods and services held constant.

Flat rate service - Basic telephone service that allows unlimited local calls at a monthly rate.

Floating exchange rates - Currency rates determined by buyers and sellers rather than government, so that the external value of a currency will rise and fall according to supply and demand in the foreign exchange market.

Flowgate - A flowgate is a specified line, set of lines, or combination of lines and other transmission assets that link two nodes (busses) in the power system over which power flows.

Flowgate price - A flowgate price corresponds to the associated cost of using the flowgate to move power between two nodes in the system when the flowgate is being used to capacity. The associated cost of using the flowgate at capacity is equal to the difference between the cost unconstrained dispatch and the dispatch necessary to alleviate the congestion at the flowgate.

Forecasting - Making predictions regarding future outcomes (such as business performance or demand) based on market research. Statistical analysis is used to identify functions relating other variables to the dependent (forecast) variable.

Foreign direct investment - Investment in other countries that creates production capacity; i.e., investment in physical assets rather than financial instruments.

Form of Regulation: Prices can be set and adjusted according to a number of approaches, including rate of return, price caps, and hybrid regulation. Various tools, including benchmarking comparisons, can be used to establish performance targets for firms. Besides price, quality of service (including reliability), capacity expansion, and other elements may come under regulatory oversight.

Formal complaint process - A special procedure to resolve remaining differences after an *informal complaint* procedure has not yielded results satisfactory to the customer.

Formula - An equation or rule relating variables to one another. For example, a demand formula expressed mathematically would include coefficients on price and other independent variables—showing how quantity demanded depends on the values of these other variables.

Forward exchange rate - A contracted rate for the purchase of foreign exchange at a fixed point in the future; participation in such activity can involve *hedging* (insurance) or be purely speculative.

Forward integration - The joining of firms that are positioned at different stages in the chain of production. In this case, a firm at an early stage (mining) might integrate into shipping the ore. A shipping company purchasing a mining company is an example of *backward integration*.

Forward market - That part of the foreign exchange market concerned with contracting for currency to be bought or sold in the future.

Franchise - A type of business organization allowing use of a business name and products by outlets which purchase these rights but are individually owned.

Franchise service territory - In the case of a utility-granted monopoly, the geographic area cannot be served by others. Entry is limited by regulation.

Free entry (exit) - Lack of barriers to firms' entry or exit in an industry.

Free riders - Consumers who enjoy goods without paying since access cannot be easily limited; e.g., neighboring firms who benefit from the private safety patrols paid for by another firm.

Fuel charge - The rate charged per kilowatt-hour or cubic feet to cover fuel costs for power production.

Fuel cost adjustments - An adjustment to the customer's bill when the actual cost of fuel at the supplier's generating stations varies from a previously specified unit cost. Such adjustments would be part of the rate settlement that established prices for some period of time.

Full capacity - The state reached when a firm or economy cannot produce more with existing resources. For example, an electricity generating plant has a maximum amount that it can produce per hour.

Full cost pricing - Pricing that allocates *fixed costs* among all products or services sold.

Fully allocated cost (FAC) - An accounting method to distribute all costs among a firm's various products and services; hence, the FAC may include costs not directly associated with a particular product or service.

Fully distributed costs (FDC) – See *Fully allocated costs*.

Futures market - A market of contracts for delivery of commodities at a specified future time and price; price is often based on an auction or market basis. A futures market is generally a standardized, exchange-traded, and government-regulated mechanism for *hedging* against price changes.

Gas, natural - Often found along with oil in porous geologic formations beneath the earth's surface, natural gas is a mixture of hydrocarbon and non-hydrocarbon gases, primarily methane.

GDP deflator - The index value that removes the effect of inflation on GDP; calculated as total domestic income divided by the deflator and multiplied by 100. GDP is short for gross domestic product.

Gearing ratio - Also called *financial leverage*. Calculated as long-term debt divided by equity plus long-term debt multiplied by 100, the gearing ratio reflects the percentage of capital available for an enterprise that is financed by debt and long-term arrangements. Generally, the higher the gearing, the greater the risk. Gearing is a U.K. term used for financial leverage.

Generation dispatch and control - Aggregating and *dispatching* generation from various facilities, and providing backup and *reliability* services. *Ancillary services* include the provision of reactive power, frequency control, and load following. (See *PoolCo* and *power pool*.)

Generation, generating plant electric power - The large-scale production of electricity in a central plant. A power plant consists of one or more units, each with an individual turbine generator. Turbine generators (turbines directly connected to electric generators) use steam, wind, hot gas or falling water to generate power

Geographically averaged prices - Prices established by averaging the costs of network elements across a large region so that customers in different areas pay the same rates.

Giffen good - A rare type of consumer good in that an increase in income actually decreases demand. A Giffen good is an extreme form of *inferior good*. It arises because the income effect is opposite to and outweighs the *substitution* effect.

Gigawatt (gW) - One gigawatt equals one billion (1,000,000,000) watts, one million (1,000,000) kilowatts, or one thousand (1,000) megawatts.

Gigawatt-hours (gWh) - One gigawatt-hour equals one billion (1,000,000,000) watt-hours, one million (1,000,000) kilowatt-hours, or one thousand (1,000) megawatt-hours.

Gini coefficients - A precise way to measure the position of a Lorenz curve, characterizing the degree of inequality across components.

Glide Path: In the case of price cap regulation, the price trajectory can be established by the regulatory authority. Instead of a one-off price adjustment (a large discrete price change), the regulator may establish a prescribed price path over time, so companies are given proper signals for future cost containment and investments. See price cap path.

Governance - Rules, processes and behavior that affect the way decision-making authority (power) is exercised, particularly regarding openness, participation, *accountability*, effectiveness and coherence.

Government franchising - The process whereby the state selects and monitors an organization that is responsible for delivering service in a geographic area.

Government intervention - Government policies that affect the working of a market; e.g., price controls.

Grace period - A period of time where there is particular flexibility or absence of penalties, for example, the time period during which new telephone customers can select a primary long distance carrier without incurring a charge from the local company.

Green power, green pricing - Optional service, usually at a premium price, for power produced by renewable fuels such as wind and solar.

Grid - A system of interconnected power lines and generators that is managed to meet the requirements of customers connected to the grid at various points. An independent company responsible for the operation of the grid is sometimes called a gridco.

Grid code - A document that contains the minimum technical rules governing maintenance of network stability, security, and *reliability* and that is mandatory for all market participants. Such documents are prepared by a transmission system operator (TSO) and approved by a regulatory body, either an independent *regulatory agency* or ministry representing the government of the country where the TSO is located.

Gross domestic product (GDP) - A measure of the total value of all goods and services

produced in a given country in a given time period, usually a year, excluding net property income from abroad. It can be measured as the total of income, expenditure or output.

Gross investment - Total investment without accounting for depreciation.

Gross national product (GNP) - A measure of worldwide economic activities by a country's citizens. The difference between GNP and GDP is the value of any net property income from abroad.

Hard loan - One charging a commercial rate of interest and offering no concessions (or implicit subsidies) to the debtor. The terms and conditions are based on the perceived financial risks associated with the organization or country receiving the loan.

Hearings: Regulatory commissions often institute procedures for listening to facts and evidence from the various parties that will ultimately be affected by a commission decision. These scheduled sessions provide opportunities for citizen participation in the process, and they improve the transparency of decision-making. Some commissions adopt a near-judicial approach to regulatory proceedings, while others have more informal mechanisms for determining rules.

Hedging - Buying or selling futures contracts as a protection against loss associated with price fluctuation.

Hedging contracts - Contracts that set future prices and quantities of goods (such as electricity) independently of the short-term market. *Derivatives* may be used for this purpose. (See *contracts for differences, futures market, and options*.)

Holding company (electric utility) - In general, a parent company that directly or indirectly owns a majority or all the voting securities (such as common stock) of one or more electric utility companies located in the region. Under the U.S. Public Utility Holding Company Act of 1935, a holding company is "any company which ...owns, controls ... ten percent or more of the outstanding voting securities of a public utility company."

Holiday rates - Discounted rates for using a service when demand might be low. For example, the lower charges for long distance calls on certain holidays, as determined by each telephone company.

Horizontal equity - Fairness, in terms of equal treatment of different people in the same circumstances.

Horizontal integration - The merger of two companies in the same industry and at the same stage of production.

Horizontal merger - The merger of two companies at the same stage of production.

Horizontal network - The part of a country's transmission system for electricity that is

significantly influenced by cross-border exchanges.

Household income - The total income earned by all households in an economy, a significant part of the overall level of national income.

Human capital - The skills, creativity, knowledge and expertise of workers.

Hybrid Regulation: Approaches to regulation combining features from a number of regulatory systems. See hybrid regulatory systems.

Hybrid regulatory systems - A mixture of different types of incentive plans—for example, cost of service over a range of returns, but price caps over other ranges. Alternatively, the use of yardstick comparisons in creating price caps.

Hydroelectric generator - An electric generation system that is powered by falling water. A special type operates as a pumped storage facility; i.e., electricity is used to pump water uphill to a reservoir when power demand is low and electricity is cheap to produce; when demand is high and electricity more expensive to produce, the stored water is allowed to flow down through hydroelectric generators.

Hyperinflation - Very high rates of inflation, which can create major economic problems and political instability. For capital intensive industries, great uncertainty about inflation reduces incentives to invest.

Imperfect competition - Situations where the *equilibrium price* is not the result of the impersonal forces of supply and demand—but due to the interaction relatively large rivals. The result of market structures that feature *barriers to entry* and differentiated products.

Import controls - Government-imposed measures that limit the entry (importation) of goods into a country.

Import prices - Prices for imported goods.

Import restrictions - Limitations regarding the purchase of imports, e.g., quotas and tariffs.

Imports - Goods, services and capital assets purchased abroad.

Imputed income - Income estimated on the basis of opportunity cost.

Inadequacies of information - Limitations in available information (including data and assumptions regarding forecasts). Information is generally incomplete (compared with an ideal data base), but when it is also inaccurate, the inadequacies begin to have a significant affect on decisions. See *information asymmetries*.

Incentive effect - An outcome based on policy design that emphasizes rewards and penalties; e.g., obtaining greater effort by offering bonuses for reaching set goals.

Incentive efficiency - Adopting appropriate structure of rewards and penalties, based on available information.

Incentive Regulation: Regulation that encourages certain types of corporate behavior. Some incentives can be perverse—discouraging cost containment. See incentive-based regulation and performance based ratemaking.

Incentive-based regulation - Conscious use of rewards and penalties to encourage good performance. See *performance based ratemaking*.

Inclining block tariffs - Unit prices that are constant over some range of customer consumption but are higher at higher levels of consumption. Utilized by some water and electricity utilities. For example, the price per kWh is 3¢/kWh for the first 200 kWh per month and 5¢/kWh from 201-500 and 8¢/kWh beyond.

Income distribution - See *distribution of income*.

Income elasticity of demand - The percentage change in quantity demanded, given a 1% increase in income. A value greater than 1 indicates an income-elastic or income-sensitive product, one for which percentage change in quantity will grow by more than the percentage change in income; a figure less than 1 indicates an income-inelastic product. Income elasticity of demand is important information for a firm in terms of predicting how demand for its products will grow as per capita incomes rises or during a business cycle.

Income inequality - The extent to which income is distributed unevenly, unequally. See *distributional fairness*.

Income Statement: An accounting statement that relates sales, expenses, and net profit for a given period.

Income tax - A tax on wages, rent, interest and dividends that is collected according to legislated rates.

Increasing returns - In the short run, the result when an addition to a variable factor of production creates a rise in marginal product.

Incremental costs - The change in capital and operating costs arising from any incremental output increases, in contrast to fully allocated costs. So long as *incremental revenue* continues to exceed incremental costs, a company increases its value when it expands output.

Incremental revenue - The additional revenue from an output expansion, also derived from bundling products or services.

Independent goods - In contrast to *complementary goods*, these are not consumed in tandem but are unrelated to each other.

Independent power facility - A facility outside an electric utility's rate base. Depending on the law, it may be able to sell only wholesale power to utilities for resale. With *liberalization* or deregulation, these plants can sell power directly to *ultimate customers* as retail transactions or through the purchase of transmission and distribution services.

Independent power producer (IPP) - Any owner/operator of facilities for independent power production.

Independent service provider (ISP) - Firms providing telecom services over fixed or mobile networks that they neither own nor operate.

Index numbers - These start with a value of 100 for a *base year* with subsequent values measured as a percentage change from the base; e.g., a value of 105 means the variable measured by the index has risen by 5% compared with the *base year*. A familiar index is the retail price index, which measures changes in retail prices and therefore serves as one measure of the rate of inflation.

Indicators - Variables that reflect economic performance; e.g., interest and unemployment rates, retail sales.

Indirect taxation - Any surcharge on retail price imposed by government and therefore a tax on expenditure; e.g., taxes on purchases of alcohol, tobacco, gas.

Indivisibilities - Production situations where output expansions involve discontinuities. Inputs must be utilized at some particular levels to obtain output.

Industry regulators - Government organizations responsible for industry oversight. In the past, ministries established public policy and promulgated rules. Today, most nations have created independent regulatory commissions to *monitor* the behavior of firms, establish rules for market entry, and procedures for changing prices. Commissions generally establish incentives to promote service quality and universal access. Some have antitrust responsibilities. Other agencies may *monitor* performances by firms across sectors, including environmental impacts and worker safety.

Inelastic - Unresponsiveness of a variable to changes in another.

Inelastic Demand: A situation where a one percent price change leads to a less than one percent change in quantity of service or product demanded. Relatively large percentage changes in price cause relatively small percentage changes in quantity demanded. Inelastic demand means that quantity demanded is not very responsive to changes in the price. An inelastic demand has a coefficient of elasticity between zero and minus one.

Infant industries - Those at an early stage of development.

Inferior goods - Goods with a negative income elasticity. Increases in income cause a decrease in quantity demanded at a given price (e.g., kerosene.)

Infinitely elastic demand - In graphical terms, a completely horizontal demand curve. Quantity demanded drops to zero at a higher price but will increase without limit at a lower price. A *perfectly competitive* firm (unable to influence price) faces such a demand.

Inflation - A rise in general prices accompanied by a reduction in the value of money; usually measured by the *retail price index (RPI)*.

Informal complaint - One made without recourse to formal guidelines.

Informal sector - That portion of the economy that is not registered with the tax authorities. For example, activities (such as black market transactions) are not reported to the government.

Information - Data that has been recorded, classified, organized, related or interpreted so that meaning is apparent.

Information asymmetry – In the context of regulation, the operator has information that is unavailable to the regulator. See *adverse selection* and *moral hazard*.

Information disclosure - Requirements that a market participant (such as a regulated firm) provide information. If the information is sensitive (reveals key data or strategies to rival firms), the regulator will limit data available to others

Information gathering - Activities related to the collection and assembly of data and information. For example, regulators often collect income statements from regulated utilities.

Information inadequacies - See *inadequacies, information*.

Information superhighway - A reference to the Internet and Worldwide Web.

Infrastructure - The physical and financial capital embedded in public transport, communication, energy and public service networks, e.g., roads, railways, power stations, schools, bridges, sewers and hospitals.

Innovation - The introduction and dissemination of a new idea, production method or product throughout a society and economy and leading to change in both. Considered a primary source of economic growth.

Inputs - Resources that contribute to a production process; e.g., land, labor, capital.

inputs. Different sectors have different opportunities for productivity growth.

Installation - The act of connecting a customer to a network, e.g., telephone service.

Institution: The term can take on a number of meanings. It can be an organization which is in the business of holding assets (such as banks, insurance companies, and investment companies). It can also apply to traditions or procedures, as in those associated with a regulatory commission. Also, see institutional factors.

Institutional factors - Conditions and formal and informal rules in the society that constrain behavior. These may stem from legislative, executive, or judicial actions, depend on administrative capabilities, informal norms, and social cohesion. Organizations develop and adapt within the framework provided by institutions.

Insurance - A financial contract based on actuarial studies of loss patterns for large populations. Insurance provides a way to minimize financial losses from fire, theft, etc. by regular payments (premiums) to cover costs should the event occur.

Integrated resource planning (IRP) - Planning for electric power needs that accomplishes specified social and environmental goals by considering both demand-side management (to reduce electricity demand) and supply-side management (to redistribute types of generation among fuel types, locations, etc.). A public planning process to evaluate the optimal mix of utility resources and options. In the U.S., IRP has become a formal process prescribed by law in some states and under some provisions of the Clean Air Act Amendments of 1992.

Integrated services digital networks (ISDN) - A type of network that allows users of *telecommunications* media to communicate with one another, sending and receiving information from personal computers at a quicker speed than with a modem.

Interconnected network - Links between systems that can improve *reliability* or allow interactions across networks. Interconnected lines included within the limits of a geographical area or operation.

Interconnected system - A number energy companies linked together by a common, centrally managed regime of generation, transmission, and distribution.

Interconnection - Links that (due to interoperability) facilitate transactions across networks. For example, any connection (lines, cables, transformers, etc.) that can be used to convey electrical energy in either direction between networks, between power stations, or between power stations and networks.

Interest - Payments by person receiving a loan for use of funds. The amount paid to a lender over and above the original sum borrowed.

Interest cover - A measure of how many times over a company can pay its interest due from the level of profit being earned (net profit before interest and taxes divided by interest paid; the higher the resulting figure, the easier for the company to pay). As the *gearing ratio* measures the relative level of debt and long-term finance, the interest cover ratio measures the cost of long-term debt relative to current earnings.

Interest rates - Expressed as a percentage per annum, interest rates can be thought of as the price of money; i.e., the extra amount that has to be paid on a loan.

Inter-exchange carrier - In telecommunications, a provider of network services linking different telephone exchanges.

Interface - The place where systems meet and act on or communicate with each other; the point of connection, for example, between two telecommunication networks or between a telecom network and customer equipment.

Interference - The static and other noises sometimes heard over the phone line.

Intermediate outputs - Output of product or service components that are used in another stage of the production process.

Intermediate targets - Objectives that serve as proxies of the ultimate objective, used to evaluate how well a strategy is performing in achieving its goal.

Internal constraints - Limits placed on behavior by a company's rules, governance procedures and practices.

Internal rate of return (IRR) - Used to evaluate a project's financial viability. Calculated from a project's cash outflows and inflows. It sets the present value of the project at zero, and assumes that the cash flow can earn the IRR.

Internet service provider - An enterprise that provides access to Internet services.

Internet telephony - A type of telephony that uses the Internet for communication by voice.

Inter-operability - Allows portions of a network to interface with other systems or networks. For example, the technical features of a group of interconnected telecom systems that allow provision of a given service in a consistent and predictable way.

Interruptible service - A type of service available to customers under schedules or contracts that anticipate and permit service interruption on short notice. This arrangement enables the electricity distribution company to deal with peak demands (and the associated high cost of service) by rationing the service.

Interstate pipeline - A pipeline that transports natural gas across state boundaries. In the U.S. such pipelines are subject to FERC jurisdiction under the U.S. Natural Gas Act.

Intervention - Any form of government interference with market mechanisms, especially as an attempt to influence market outcomes, e.g., setting environmental standards or establishing price controls.

Investment appraisal - An evaluation of investment projects to determine the most profitable.

Investment: An item of value purchased for income or capital appreciation. Capital investments include equipment, pipes and other fixed assets. Financial investments include stocks, bonds, and other securities.

Investor-owned utilities (IOUs) - Those utilities organized as tax-paying businesses and usually financed by the sale of securities in the free market; IOUs are generally corporations whose management is responsible to the shareholders.

Invisible hand - Adam Smith's theory regarding how a free market (i.e., a *perfectly competitive market*) arrives at optimum outcomes and works for the greater benefit of society as individuals seek their own self-interest. Smith was a Scottish social philosopher and political economist who lived 1723-90.

IRP - See *integrated resource planning*.

ISO - An independent system operator (ISO) maintains balance of the grid system by controlling the *dispatch* of plants and ensuring that loads match system resources. As such, the operator must be neutral and independent.

Joint Costs: When multiple products are provided from the same production unit, determining cost causation can be difficult. If products can be produced only in fixed proportion, they do not have separable incremental cost functions. In such cases, the incremental cost is the cost of the composite product. However, when the cost causation of multiple products can be separately determined for each product (through accepted methodologies), the process is viewed as involving common costs. For example, some overhead costs might be able to be linked to relative output levels.

Joint demand - The associated demand for complementary goods; i.e., those used together.

Joint ownership - Proportional sharing of costs (capital investments and expenses) and profits by two or more firms according to a contracted arrangement (usually based on investments).

Joint supply - Products that are produced together. Product B might be viewed as a by-product of Product A if demand for the latter is the primary determinant of the level of production capacity.

Journalists: Reporters or editorial-writers for periodicals, such as newspapers. Such individuals work in other media, including television and electronic media.

Judicial review – Review of an administrative decision by the Judicature. This procedure is used to control administrative discretion and fairness of conflicts resolution.

Laissez faire - An economic philosophy opposing governmental intervention beyond the minimum necessary for the maintenance of peace and property rights in the belief that markets are the best organizers of economic activity.

Late charge - A penalty fee for customer payments received after their due date.

Late payment - Payment after a bill is due.

Law of diminishing marginal utility - An economic principle stating that the more a consumer has of a given commodity, the smaller the satisfaction from each additional unit consumed during a time period.

Law: The term has several meanings. First, it can refer to a generally accepted, verified, proven, fundamental scientific relation. A law is a scientifically verified, cause-and-effect relation about the workings of the world. It has been tested and retested through the scientific method. The law of demand, law of increasing opportunity cost, and law of diminishing marginal utility are three fundamental (and extremely important) economic laws of nature. Second, the term can apply to legislative statutes.

LEC (local exchange carrier) - A local telephone company.

Legal Frameworks: laws and policies at several levels that operate together to impact individual and social behavior.

Legal Process: Steps involved in the implementation, application, or judicial appeal of laws. The national constitution (as interpreted by the nation's highest court) serves as final step for most cases. The record of testimony, procedures, and decisions can be used to track actions at the various steps of the process.

Legislation: Law enacted by a legislative body

Liabilities - Financial commitments that can be summed up as money owed; e.g., similarly, on a balance sheet, liabilities include short-term debt, long-term debt, and accounts payable. The main liabilities of banks are the deposits of their customers.

Liberalization - Opening up markets to the forces of supply and demand involving a reduction of government intervention, including greater freedom of entry.

License: Permission to engage in a certain activity, granted by the appropriate authority. Service obligations and technical requirements are generally specified in the associated document.

Licensing - A contractual arrangement whereby an authorized government entity gives permission for a firm to operate. For example, an environmental protection agency may license a generator, or a utility commission may *monitor* a license issued by a ministry. Also, a private firm may license another to use a patent, utilize a brand, or sell through particular retail channels.

Licensing service specifications - Terms and conditions associated with a licensing process. Performance standards (specified in the license), that must be met if the license is to be continued. These targets can involve very complicated arrangements for determining compliance.

Lifeline rates - Rates designed to promote universal access and emergency service (e.g. in telephones, a minimum number of minutes included in the basic rates). See *low usage tariffs* and *low income tariffs*.

Light-handed incentives for efficiency - See *light-handed regulation*.

Light-handed regulation - Allows the firm discretion in how it meets regulatory targets. Regulation that is not intrusive, in contrast to command and control or even *cost of service regulation*. This process is designed to reduce information requirements and high compliance costs, while introducing clear incentives for good performance. See *performance based regulation*.

Limited company - One owned by shareholders with limited liability; i.e., their losses are limited to the amount they have invested.

Limited disconnection - Also called soft *disconnection*, limited disconnection allows people whose telephone service has been canceled to call emergency services and the phone company on their telephone.

Limited liability - Restriction of shareholders' losses to the amount of capital they have invested in a company. See *limited company*.

Liquid assets - Assets that can be converted to cash quickly and easily.

Liquidity - The ease with which an asset can be converted to cash.

Litigation: A process of contesting an issue in an adversarial lawsuit—which can be settled by a judicial trial or pre-trial agreement.

Load - The power demanded from a utility system at a given point in time. The peak load capacity is the most power that can be drawn down at any point of time.

Load centers - A geographical area where large amounts of power are demanded by end users.

Load curve - A graph of the varying demand and load over a given period, shown as kilowatts provided.

Load factor - The ratio of the average load supplied, in kilowatts, during a given period compared to the peak or maximum loads in that period. A load factor of one implies a constant demand throughout all 15 minute periods.

Load following - A *wheeling* utility's obligation to make up from its own generation sources any difference in the amount of power being wheeled and the requirements of the customer receiving or the supplier delivering the wheeled power. This involves dedicating sufficient generating capacity to the automatic generator control (AGC) mode and monitoring mismatches between intended and actual interchanges between control areas and transmitting control signals to AGC generators to minimize this mismatch. Load following helps maintain system frequency. Otherwise, generators would slow down if demand exceeded supply and speed up if supply exceeded demand. Both situations could result in an unstable situation that could lead to a widespread outage.

Load management - In contrast to conservation strategies to reduce energy usage generally, load management tries to shift demand from peak generating periods to off-peak times. Many utilities encourage load management by offering customers a choice of service options with various price incentives. See *interruptible rates*.

Load profile - Based on individual customer data or averages for similar customers, a load profile can be used to estimate electricity usage and determine the cost of service. Customers with small energy needs may want to participate in *customer choice* billing based on a load profile rather than interval demand meter data.

Load shifting - Moving energy load from on-peak to off-peak periods.

Loan principal - The original amount of money borrowed under a loan.

Lobbying - Attempts by individuals and organizations to influence public officials toward a desired action or policy. Lobbyists can provide useful information that helps clarify the implications of policy options; however, much lobbying activity is directed at benefiting special interests which have the economic (and therefore political) clout to influence legislation and agency rulings. Nations often attempt to address the potential ethical issues associated with the abuse of access through registration and reporting requirements.

Local call - One within a limited geographical area designated by the local telephone company.

Local distribution company (LDC) - A company that engages in transporting a service in a narrow geographical area. In the case of natural gas, a company that buys gas for resale to end users and that may deliver the gas from interstate pipelines to the end users' facilities.

Local exchange - See *central office*.

Local loop - The wire connecting the telephone company's central office building to the customer's property.

Long distance call - See *toll call*.

Long run - A relatively long period of time during which all economic inputs, including capital, can be changed.

Long-run average cost curve - A graph of the minimum unit cost of production at each level of output while allowing plant size to vary.

Long-term liquidity ratios - These financial ratios assess the performance of funds invested in a company for a longer period of time; including the gearing and *interest cover* ratios. They measure the extent to which the *capital employed* in the business has been financed either by shareholders or by borrowing and long-term financing.

Loss (energy, water, and commercial losses) - Energy (kilowatt-hours) and power (kilowatts) lost or unaccounted for in the operation of an electric system; primarily attributable to energy transformations from kilowatt-hours to waste heat in electric conductors and apparatus (line losses). Water losses are often from leakages in a system. Commercial losses encompass service theft: taking service without making payments to the service provider.

Low-income tariffs - Price structures available to customers below a designated income threshold to promote universal access to infrastructure services. Such tariffs generally involve targeted *subsidies*.

Low-usage tariffs - Price structures available to customers who are willing to consume relatively small amounts of service. These tariffs may involve *inverted block rates*, sometimes labeled "*Lifeline rates*."

Mandates - Input requirements or performance targets specified by legislation or agency rulings. Such requirements generally give little or no discretion to the firm that must comply. Meeting mandates requires expenses that usually are passed on to customers in the form of higher prices (unless there is already significant managerial slack). There can be penalties associated with non-compliance.

Marginal cost - The cost of providing the next unit of output. When larger increments of output are considered, the equivalent term is *incremental cost*. Sunk costs would be ignored since these do not change with a small increase in output.

Marginal cost pricing - Setting price equal to the additional cost of producing each unit (e.g., kilowatt-hour) in terms of changes in associated variable costs.

Marginal external benefit - Benefit resulting from the production or consumption of additional units accruing to a different party than the one producing or consuming the product. See *positive externality*.

Marginal external cost - Cost resulting from the production of one additional unit accruing to a different party than the one producing or consuming the product. See *negative externality*.

Marginal price - For a single service, the price per unit for the next unit if it were purchased. Under *block tariffs*, the marginal price depends on the level of consumption. In the case of multiple products, the difference in price of a *bundled service* with and without a particular element.

Marginal private benefit - The increase in benefit obtained from consumption or production of one additional unit received by the entity consuming or producing the product.

Marginal private cost - The cost incurred from consumption or production of one additional unit borne by the entity consuming or producing the product.

Marginal product - The change in *total product* obtained with an additional unit of a variable factor (e.g., labor).

Marginal product of labor - The addition to output when there is one additional worker (holding other inputs fixed).

Marginal rate of tax - The proportion of each extra unit of income owed to the government. High marginal tax rates can act as a disincentive to effort.

Marginal revenue - The change in *total revenue* from the sale of one additional unit. For a *perfectly competitive* firm (or price-taker), marginal revenue is equal to price. For a firm with a downward sloping demand, marginal revenue is less than price.

Marginal social cost - The cost incurred by both the firm and society for each extra unit of a good or service produced. The marginal social cost includes any *negative externality*.

Market - Collection of buyers and sellers that, through the forces of supply and demand, determine the price of a product.

Market concentration - Market domination by the largest firms in the industry expressed as the percentage of market output produced by the top four firms: four-firm concentration ratio. A more sophisticated measure of concentration (*Herfindal Index*) incorporates the size distribution of all the firms supplying output to the market.

Market economy - An economic system that rewards individuals on the basis of their skills, effort, and of the value of the resources they own, where resources are allocated through supply and demand (price mechanism).

Market failure - A situation where the presence of *positive externalities* or *negative externalities* leads an output level for a product that is too low or high. That is *marginal social benefit* deviates from *marginal social cost*. Also, see *market imperfections* for a related set of circumstances that yield inefficient output levels.

Market for loanable funds - This is the financial market where firms borrow funds supplied by investors.

Market foreclosure - Government erection of entry barriers. Also, business conduct that limits market access by other potential suppliers. For example, *vertical integration* by a manufacturer into retail that dramatically reduces the ability of other manufacturers to obtain distribution channels.

Market imperfections - Situations that differ from those that characterize efficient competitive markets. *Market power* is inconsistent with perfect competition. Also, when consumers are not aware of the consequences of decisions on their own health or well-being (e.g., unhealthy food or unsafe products), such consumer ignorance is sometimes viewed as a market imperfection. Such imperfections provide a potential justification for government intervention (and antitrust and product labeling, in the above cases). See also *market failures* for another category of problems.

Market penetration - A strategy of low pricing or intensive marketing used to enter a market and expand market space.

Market penetration pricing - Reducing price to increase market share.

Market Power: The ability of a company to raise prices above the competitive level for a non-transitory time period. Generally, such power is based on absence of close product substitutes, a low degree of competitive rivalry, or the presence of entry barriers.

Market Reform: Government intervention that is ostensibly designed to improve market performance, reflecting lessons learned from past developments. Generally, such reform involves liberalization: reducing entry barriers and encouraging new entry at those production stages where competition is feasible. In the case of electricity, reform might involve restructuring generation, developing new incentives for improvements in transmission and distribution, promoting regional trade, and adopting a regulatory system.

Market rules - The procedures that must be followed to participate in a market. In the case of electricity, these would be the operating rules for an open electricity market prepared by a group representing the interests of different market participants and approved by appropriate regulatory bodies.

Market segment - A particular group of consumers within a market, e.g., those above a particular age or those lacking substitutes.

Market share - A firm or brand's share of total sales of a product or service.

Market structure – The characteristics of a market, including *concentration* (the number and size of distribution of firms), extent of *product differentiation*, entry conditions (including *entry barriers*), and degree of *vertical integration*.

Market supply curve - A graph showing the horizontal summation of all individual *supply curves*.

Market value - The current value of a security or commodity according to present market quotations, and thus presumably the price at which additional amounts can be bought or sold.

Market-based price - A price set by individual decisions among buyers and sellers in a competitive *market*.

Marketer (for energy) - In contrast to an energy *broker* who functions as a middleman, an energy marketer is an agent for generation projects and markets power on behalf of the generator. A marketer may also arrange transmission, or other *ancillary services* as needed.

Marketing economies of scale - An advantage of large firms, which have a lower unit cost for advertising and promotion than small firms.

Marketing mix - The balance of marketing techniques to sell a product or service. These consist of price (compared to that of competitors), targeting of product to a particular market segment, promotion (advertising, etc.), and product distribution channels (place).

Mark-up - The *profit margin* on a good or service.

Mark-up pricing - Setting price a certain percentage above average cost.

Maximum price - An upper limit on price set by government. If set too low, the result is significant excess demand--requiring some form of non-price rationing.

Measurable economic welfare - An adjustment to GDP made by considering economic well-being. For example, adjustments are made for the value of leisure time and the value of household services (cleaning or child-care) that are unpaid. Such measures also attempt to incorporate the *negative externalities* associated with pollution.

Measure of value - The use of some common denominator, such as money, to compare the value of goods, services and factor rewards.

Measured rate service - A type of basic phone service involving charges for each local call.

Mediation: A process in which an impartial party assists in settling differences among contending parties: an informal, voluntary process intended to resolve conflicts, without resorting to compulsory arbitration or protracted litigation.

Megawatt (MW) - The equivalent of 1 million watts.

Megawatt-hour (mWh) - The equivalent of 1 million watt-hours.

Menu auctions - Auctions that involve bids with multiple components. For example, a firm might bid on the *maximum price* it will charge over the next five years and on the percentage of the population with access to the service at the end of the time period. Selecting a winner would require that weights be given to each component.

Merchant banks - Those providing mainly commercial services, including issuance of company shares.

Merger - The combination of two firms to form a new company.

Merit goods - In contrast to *demerit goods*, which are perceived as having a negative social value, merit goods (like education) are seen as having a positive social value. They would tend to be underprovided in a pure free-market economy. For example, vaccination programs keep disease levels low, but individuals responding only to market forces may be unable to afford the vaccination or not take into account the extent others benefit from reduced risk of being exposed to a disease. Without government intervention, there would be negative social effects.

Message unit - A unit of measurement for telephone charges based on use.

Minimum charge - A provision in a rate schedule maintaining charges for service at a certain specified level regardless of use; i.e., it ensures that customers' bills do not fall below a certain amount, even if little or no energy is consumed. Such charges reflect cost causation if they are based on costs of service such as meter reading, billing and facilities maintenance.

Minimum efficient plant size - The smallest size possible for a plant to operate relatively close to minimum average cost for a larger plant.

Minimum price - A lower limit on price set by government. If set too high, the result is significant excess supply, resulting in output that is not purchased by consumers and often leading to some form of production restrictions. See *surplus*.

Ministerial policy guidance - Documents or statements establishing policy objectives and general approaches to economic and social issues--leaving investigation, rule-making, and implementation to appropriate regulatory agencies.

Mixed economy - One in which resources are owned both by private individuals and the government.

Mobile phone - One that functions without a physical (wired) link to a telephone company.

Modem - A device that links computers by using the telephone network, converting audio tones to digital pulses and vice versa.

Monitor - To check, observe, or scrutinize. In the case of telecommunications, an employee of an information provider who participates in or supervises live 900 or 976 calls.

Monitoring - Listening in on telephone conversations between others. Can be used for legal administrative purposes.

Monopolistic competition - Competition among a large number of small firms that produce *differentiated products*. Easy entry and exit, e.g., restaurants in a large city.

Monopoly - Exclusive control of a market by a single provider, supplier or seller.

Monopoly profits - Above-normal profits earned by monopoly providers, suppliers, or sellers.

Monopsony - A market with only one buyer (single customer). An unregulated *monopolist* will undersupply a product (to increase the price), halting production where *marginal revenue* equals marginal cost. Similarly, a *monopsonist* will purchase less of a product to decrease the price it has to pay, to where its marginal expenditure just equals the marginal benefit from an additional unit of the good or service.

Monthly charges - Recurring charges for a service such as basic telephone service.

Moral hazard - When the operator has private information about the amount of effort that is required to provide the service efficiently, this is called *moral hazard* because the operator has an incentive to exert less effort than the regulator would prefer after the regulator establishes its policies. In addition, *moral hazard* can result in the possibility of loss attributable to the character or circumstances involved in an agreement. This situation occurs when one party to an agreement changes behavior after reaching an agreement. E.g., when an insurance company is not given complete or accurate information about future behavior by the insured, where the insured party will be less careful than when the party was uninsured.

Multinational corporation (MNC) - A company operating in more than one country.

Multi-part pricing - In contrast to a uniform price, the use of price structures to enhance revenues or better track cost-causation. E.g. fixed monthly fee and per unit price; pricing both kWh consumed and kW demanded during the period. *Declining block prices* are also a form of multi-part pricing based on consumption levels.

Multi-part tariffs - See *multi-part pricing*.

Municipalization - A municipality's assumption of responsibility for supplying utility service to its residents. In the case of electricity, the city could either generate and distribute power or purchase it wholesale and distribute it. The term is sometimes used to refer to the process whereby a privately owned utility is bought and operated by the municipality, sometimes under extreme pressures—such as not providing rights of way or levying taxes so as to make current private operation uneconomic.

Municipally owned electric system - One owned and operated by a municipality and usually offering service within the municipality's general boundaries.

Nationalization: Government take-over of an industry or company, transferring ownership from private individuals to the national government.

Native load customers - Those customers, wholesale and retail, served by a transmission provider under the terms of a statute, franchise, regulatory requirements, or contract.

Natural advantages - The inherent benefits of a particular locale; e.g., a good climate, access to low cost river transportation.

Natural monopoly - A situation involving a single firm that can produce a given level of output at a lower *total cost* than can any combination of firms. This occurs with *economies of scale* (relative to the size of the market) and has been used to justify public monopolies governed by regulation.

Negative equity - Characterized by an asset valued below the amount of money owed for it; e.g., a house of less value than the owner's mortgage.

Negative externalities - Also known as *external costs*, these are the adverse effects of commerce borne by those outside the activities of production and consumption and for which there is no recompense; e.g., the noise levels endured by residents near an airport.

Negotiation - A process of reaching agreed terms among different stakeholders.

Net asset turnover ratio - A measurement of the ability of management to use a firm's net assets to generate sales revenue, calculated as sales revenue divided by capital employed. Too high a number may indicate too little investment while too low a ratio (relative to comparable firms) suggests inefficient management.

Net income – in accounting, from the income statement: total revenue minus operating costs (including depreciation). This term is often labeled accounting profit.

Net investment - *Gross investment minus depreciation.*

Net present values - The value today of anticipated future incomes and expenditures. The formula is shown below, where CF_i is the cash flow in period i and r is the discount rate

$$NPV_o = \frac{CF_1}{(1+r)} + \frac{CF_2}{(1+r)^2} + \dots + \frac{CF_n}{(1+r)^n}$$

Net profit margin - A measure of trading profit relative to sales revenue calculated by dividing profit after interests and taxes by sales revenue and multiplying by 100; sometimes referred to as the trading profit margin. A low net profit margin can be compensated for by high volumes. Similarly, a high net profit margin allows low volumes to enable a firm to earn the required return on investment.

Net social benefit - The benefit remaining when total *social cost* is subtracted from total *social benefit*.

Network - A system of production and consumption points, switching nodes, and links (for transport). Infrastructure involves networks for telecommunications, transport, water, natural gas and electricity. E.g., interconnected transmission or distribution lines that allow multiple power supply to any principal point on the system.

Network access charge - See *access charge*.

Network interface - The technical characteristics that allow different networks to operate across *interconnection* boundaries. Each network must provide an interface at the point of connection, and these interfaces must be compatible to allow inter-operability. e.g. telephone signals that can be transported across boundaries.

Network losses (GWh) - The network losses occurring in transmission and distribution networks due to the laws of physics (*physical line losses*) and to theft (commercial losses). These are calculated as the difference between the *electrical energy supplied to the network* and the *net electrical consumption measured by meters*.

Niche market - A narrow *market segment* with specialized needs met by supplies with unique capabilities. As firms gain experience, they may expand beyond the niche.

Night/weekend rates - Discounted prices for network use during *off-peak* periods, e.g. less expensive telephone rates available during periods of reduced use, usually 11 p.m. to 8 a.m. daily, all day Saturday, and most of Sunday.

Nodal prices - In electricity, prices for transmission services based on the differences in generation prices at the nodes linked by the transmission line.

Nominal data - Data with values or observations coded so that these can be counted but not ordered; e.g., designating males as 0, females as 1 or indicating marital status by M if married, U otherwise.

Nominal rate of interest - The annual return from lending money expressed as a percentage, without consideration of the rate of inflation. See *real rate, interest*.

Non-exclusive benefits - Those available to everyone and not just certain groups.

Non-governmental organizations (NGOs) - Privately financed organizations that represent particular groups or interests. For example, the Sierra Club and Greenpeace are environmental NGOs. Some NGOs provide financial and technical assistance in developing countries. Others primarily engage in *lobbying* activities.

Non-marketed output - Economic activity that is not included in official figures for national income because there are no formal transactions recorded.

Non-price competition - The variety of ways that firms compete for customers besides price; e.g., special offers, coupons, packaging, etc.

Non-published numbers - Telephone numbers that people choose not to have printed in a directory or available through directory assistance.

Non-rival consumption - That consumption characterized by free availability; e.g., air. See *non-exclusive benefits*.

Non-wage benefits - Those offered to workers in addition to monetary pay; e.g., access to health care, meal vouchers, pensions.

Normal goods - Products that experience an increase in quantity demanded when per capita income increases. This is in contrast to *inferior goods*.

Normal profits - The minimum income a firm needs to attract capital and continue operations. These returns provide bondholders with interest payments and stockholders with a combination of dividends and stock price *appreciation* that is required by equity investors.

Normative economics - Statements of opinion that cannot be proved or disproved regarding solutions to economic problems, primarily because weights given different policy objectives reflect personal preferences. See also *positive economics*.

Not-for-profit - An organization whose primary function is not to earn a profit; e.g., a charity.

Objectives: Desired outcomes, such as efficiency, innovation, expanded services, and social justice. In the regulatory or political context, citizens may have objectives for the regulatory or political process: such as transparency and stakeholder participation. Broad economic and social objectives of citizens include freedom, equality, justice, high living standards, and technological advancement. Political leaders attempt to discern (and shape) what citizens want from infrastructure sectors. Social values may reflect a consensus or be deeply divisive and lead to dramatic shifts in public policy. Events such as an energy crisis or a serious accident can also trigger changes in public priorities and a willingness to move from the status quo.

Obligation to serve - A utility's requirement to provide service to anyone willing to pay its set rates. Utilities have traditionally assumed this obligation in exchange for an exclusive monopoly franchise.

Official exchange rate - A local currency's official rate of exchange for a foreign currency.

Oligopoly - A market dominated by only a few suppliers, e.g. one with a four firm *concentration ratio* of .80

Open access - The ability of service providers to use a network operator's network under terms and conditions that facilitate access.

Open access same-time information system (OASIS) - A real-time information-sharing system that gives all buyers and sellers of electricity access to the transmission costs for all other buyers

and sellers to ensure that transmission owners and their affiliates do not have an unfair advantage in selling power. OASIS is available over the Internet in the U.S.

Open economy - One engaging in international trade with few (or no) export and import restrictions.

Operating Expenses: An expense arising in the normal course of running a business, such as managerial salaries.

Operator - In electricity, the organization responsible for ensuring that supply and demand are in balance. In telecommunications, a telephone company employee who assists people with calling. The latter role is automated in many countries.

Opportunism: The practice of taking advantage of opportunities or circumstances, or of seeking immediate strategic advantage with little regard for ultimate consequences to potentially affected parties.

Opportunity cost - The value of alternative actions foregone when decisions are made; e.g., in choosing one brand, a consumer foregoes purchase of another.

Optical fiber - The thin, clear glass fiber used in phone networks to carry signals. See *fiber optics*.

Optimal least cost - That purchase option that satisfies user requirements at the least cost, e.g. a network expansion plan that minimizes the present value of costs.

Optimum allocation - The distribution of goods such that it is not possible to increase the welfare of any one consumer without reducing the welfare of some other consumer.

Optimum output - The level of production where marginal benefits equal marginal costs.

Option - A contractual agreement that gives the holder the right to buy (call option) or sell (put option) a fixed quantity of a security or commodity at a fixed price in a specified time period. Options may be standardized, exchange-traded, and government regulated, or over-the-counter customized and non-regulated.

Optional tariffs - Provision of a menu of rate designs, giving potential consumers a choice as to which one they might accept. These can be designed to provide win-win situations—benefiting both the supplier and demanders.

Original Cost: For accounting purposes, the total costs associated with the initial purchase of an asset.

Output per worker - A measure of productivity calculated by dividing the total output by the number of workers.

Overcharge - A price above the authorized rate.

Overproduction - Production beyond a socially optimal level (financial or physical).

Overseas investment - The purchase of foreign assets.

Ownership - The entity (person or institution) that has legal claim to property.

Packaging - Materials including product containers used to display and market a product.

Paging service - A company that transmits messages to pagers.

Parallel path flow - The flow of electric power along a transmission system as a result of scheduled power transfers between two other electric systems. (The power flows on all interconnected parallel paths in amounts inversely proportional to each path's resistance.)

Parameter - In characterizing a functional relationship between independent variables and a dependent variable, when the relationship is quantified, the resulting coefficients are parameters. If precise values are not known, then letters may be assigned to coefficients. For example, for the *demand* equation, $P=A-bQ$ (where P =price and Q =quantity demanded), the parameters are A and $-b$. An empirical study might provide estimates of the two coefficients.

Pareto optimal -A definition of maximum *economic welfare* -- such that no one can be made better off without someone else becoming worse off.

Partnership - A firm owned by two to twenty people who share profits and usually have *unlimited liability* for the firm's debts and obligations.

Pay phone - A public telephone requiring payment either by coins, phone cards, or charges to another telephone account.

Payback period - The amount of time anticipated for recovery of the initial investment in a project. For example, if an investment of \$100,000 generates net revenue of \$25,000 per year (revenue less operating costs) the payback period will be four years.

Pay-per-call - A particular type of information service (e.g., chat lines and psychic advice) offered by telephone through 900 numbers for a fee greater than the cost of simply transmitting the call. This may be a per-minute charge or a flat fee.

Peak load or peak demand - The demand or load representing the maximum level of electricity use in a given time period.

Peak-load Pricing: Pricing a product at higher levels during periods of highest demand. Such an approach signals users that continuing high levels of usage are imposing high costs on the system (as when the system capacity must be expanded sooner than otherwise would be the case).

Usually, the higher prices are in effect during a specific set of hours. See also time of use pricing and real time pricing.

Penalties, non-renewal/license - When a regulated firm fails to meet a target or terms of its operating license, the consequence can be a monetary fine. In extreme cases, a license might be withdrawn, having dramatic consequences for the supplier.

Penetration pricing - Using a policy of low prices when entering a new market to gain *market share* and reduce unit production costs – through *scale economies* or moving up the learning curve.

Perfect competition - An industry with a large number of small firms selling homogeneous products to a large number of buyers.

Performance Standards: A benchmark against which to evaluate performance of an activity or of an entire organization. Standards generally do not specify how the targets are to be met, just that there are consequences for not meeting or exceeding the standards.

Performance-based regulation (PBR) - Any rate-setting mechanism that links rewards to desired results or targets by setting rates (or rate components) for a given time according to external indices rather than a utility's actual cost of service. This type of regulation gives utilities better incentives to reduce cost than cost-of-service regulation. In developing performance standards for a PBR plan, a utility should: understand its historic performance in order to develop an appropriate baseline for *yardstick* Comparisons; determine those areas where cost savings may be realized and quality may be approved; and begin collecting information on service quality and develop measures to be used for *benchmarking* performance.

Performance-related pay - Compensating managers or workers according to their level of performance.

Permanent disconnection - Complete termination of telephone service, requiring reapplication to regain service.

Personal data - Information on identifiable individuals; its use is generally restricted to avoid infringing on privacy.

Planned economies - Those controlled by the national central government, which determines the type and amount of goods to be produced.

Planning: This is the process of setting goals, developing strategies, outlining tasks, and establishing schedules for a project to accomplish the objectives (such as meeting some reliability target) set for that project. Building a review process into the project analysis increases the likelihood that the organization undertaking the project will learn from its successes and failures.

Points of connection (POC) - Switch connections made available for a fee to other providers of telephone service by network operators.

Policy instruments - Policy tools designed for particular objectives.

Policy problems - Difficulties that arise in designing and implementing policies.

Polluter pays principle (PPP) - The principle of holding polluting firms responsible for the cost of clean-up or compensation to those adversely affected by the pollution.

PoolCo - A specialized, centrally *dispatched, spot market* for power that functions as a short-term market in establishing the short-term clearing price while providing a system of long-term transmission contracts. Pool regulation guarantees open access, comparable service and cost recovery, making ancillary generation services (load following, spinning reserve, backup power, reactive power) available to all market participants on comparable terms. A PoolCo also provides settlement mechanisms for differences in contracted volumes between buyers and sellers.

Poor: A term applied to citizens in the lowest portion of the income distribution. In some nations, many families are completely destitute. The lack of education, income, and job opportunities makes poverty an important policy issue; poverty is also linked to barriers in accessing infrastructure services.

Portfolio management - The aggregation and management of a diverse set of resources that is expected to serve as a hedge against various risks that may affect specific resources. In the context of a *PoolCo*, a portfolio manager would aggregate and manage a diverse portfolio of spot-market purchases, contracts-for-differences, futures contracts and other market-hedging-type contracts and mechanisms.

Positive economics - Statements of fact about how an economy works that can be proved or disproved. See *normative economics*.

Positive externalities - *External benefits* that accrue to those outside direct production or consumption and for which they do not have to pay; e.g., expansion of vaccinations that reduces the likelihood that others catch the disease.

Potential output - That output achievable if all resources were fully deployed.

POTS (plain old telephone service) - Traditional service without any special services based on newer technologies.

Power pool - An association of energy utilities that coordinate their operations (aggregation of power from various generators, arranging exchanges between generators, and establishing or enforcing the *rules of conduct* for wholesale transactions) to maximize system stability and achieve least-cost *dispatch*. The pool may own, manage and/or operate the transmission lines (“wires”) or be an independent entity that manages transactions among others.

Power, firm - Power or capacity available at all times, even under adverse conditions, during a period covered by contract.

Power, interruptible - Power contracted for under agreements that permit curtailment or cessation of delivery by the supplier. To compensate for the lower quality of service, a price discount is applied, reflecting the reduced backup capacity required.

Power, non-firm - In contrast to firm power, non-firm power or capacity lacks a guarantee of continuous availability under all conditions.

Predatory pricing - A pricing policy to force competitors out of an industry by charging temporarily low prices. It is often difficult to distinguish between such prices and robust competition. Pricing below *marginal cost* would be viewed as potential evidence of predation.

Prefix - The first three numbers of a seven-digit telephone number.

Present value - See *net present value*.

Press: A term applied to those organizations and individuals actively printing newspapers or delivering television news programs. The media (newspapers, television, and, increasingly, the Internet) shape citizen attitudes by providing information about the implications of various infrastructure policy options. See journalists.

Pressure groups - Those formed to promote particular causes and influence particular policies.

Prestige pricing - The ability to charge a premium price because of the image or status associated with a product.

Pre-subscription - Choosing a designated long distance telephone company to provide service for a public pay phone.

Price band - A price range that has minimum and maximum prices set.

Price basket controls - In *price cap regulation*, different controls can be placed on specific products or groups of products. The price adjustment of the *price cap formula* can differ across customer groups or product groups, thus reducing the pricing options available to firms—generally to protect groups with *inelastic demands* who lack substitutes.

Price cap excessive returns - Since a pure *price cap regulation* can result in a firm obtaining very high realized rates of return under favorable scenarios (and successful cost-cutting), regulators sometimes adopt a hybrid scheme that can involve sharing high returns with customers if those returns exceed a trigger point. In addition, a maximum return can be specified if there are negative political consequences to high reported returns. Note, such sharing rules or caps on returns dampens the firm's incentives for cost containment—leading to incentives similar to those under *rate of return regulation*.

Price cap financial model - Some versions of *price cap regulation* do not focus on identifying an externally-identified X-factor, but base the price control on the revenues necessary to cover the operating costs and provide an appropriate return on investments during the control period. The *net present value* of the firm incorporates the investments required to meet *service quality* and expansion targets, as well as projected efficiencies (which can be related to an X-factor). The results of the cash flow model are used to determine the price control.

Price cap formula - A precise expression denoting the constraint facing a firm over the period of a price control. An example of a simple version of the formula would be $RPI-X+K+Q$, where the terms reflect adjustments for retail price inflation, productivity, network expansion, and improved quality of service. In practice, with *baskets* other features, the formal representation of the formula can be quite complicated.

Price cap path - At the time of the *price cap review*, a regulated firm might be earning excessive or inadequate returns. The regulator must make a determination regarding where to re-set the starting price for the new *price cap formula*. Sometimes a *glide path* is established to maintain incentives for cost containment during the last stages of a price control. Alternatively, a discrete price adjustment (or One-Off approach) is used to quickly re-set the price at a level where expected returns are not excessive (or inadequate).

Price cap regulation - See *price reviews* and *price cap formula*. Such regulation provides strong incentives to cut costs, but must the price control must also address *service quality* issues. Such regulation reduces incentives to over-invest in capital during the period of a price control.

Price cap, RPI-X regulation - See *price cap regulation* and *price cap formula*.

Price Cap: A legally established maximum price that is imposed on a product or service. Generally, this price is below the one that would otherwise be charged by the supplier (for example, a monopolist). A price cap (or ceiling) is placed on a product or service within a market with the goal of keeping the price low, presumably based on the notion that otherwise the price would be too high. However, if imposed on a product or service subject to a competitive market, a price ceiling is likely to create a shortage of, or excess demand for, that product or service. See price cap formula.

Price ceiling - An upper limit for price.

Price competition - Attempts by rival firms to attract customers with lower prices.

Price controls - Government limits on prices.

Price deflator - An index that eliminates the effect of inflation.

Price differentiation - Charging different prices for products or services. The price differentials can reflect costs, e.g., the lower cost of off-peak electricity. Or, they may be based on different price elasticities for customer groups (e.g. yield management for airlines.)

Price discrimination - Selling the same product in different markets for different prices (requires separation of markets to prevent resale). The higher prices will be in markets with relatively less elastic demands.

Price elasticity of demand - The responsiveness of demand to changes in price. Calculated by dividing the percentage change in price by the percentage change in demand, the price elasticity of demand shows how an increase in price will affect total firm revenues; i.e., a value less than 1 indicates an inelastic demand and an increase in *total revenue* for a price increase; a value of more than one indicates that *total revenue* will decrease with an increase in price. See *demand elasticity*.

Price elasticity of supply - The responsiveness of quantity supplied to changes in price, calculated by dividing the percentage change in quantity supplied by a percentage change in price. A value less than 1 indicates an inelastic *supply curve* while a value greater than 1 indicates an elastic one; i.e., quantity supplied will be highly responsive to price changes.

Price floor - A fixed minimum price, set by an organization (or government agency) capable of enforcing the price control.

Price index - A measure of the real price of a basket of goods (taking into account inflation); e.g. statistical measure of the retail price for a typical set of goods being purchased by ordinary people is the Retail Price Index (RPI) or Consumer Price Index (CPI). Other indices capture wholesale prices, export prices, etc.

Price instability - Price fluctuation attributable to unstable supply and demand.

Price makers - Those firms able to influence price.

Price mechanism - The way prices signal firms and consumers to make changes in their economic behavior; i.e., with a rise in price for a particular product, firms are encouraged to increase output while consumers may seek a substitute product.

Price Rebalancing: The process of aligning prices closer to their underlying economic costs. Such a process is designed to promote allocative efficiency. However, those benefiting from particularly low initial prices can be very poor and/or politically powerful and are likely to resist such price alignments.

Price reviews - The regulatory process whereby new prices are established for a given number of years—often three to five. In the case of a price cap, the review will address a wide range of issues, including *price baskets*, *price cap paths*, *automatic adjustments* (as for inflation), *productivity offsets* (labeled the X-factor), *quality of service*, *infrastructure expansion targets*, and *financial models*. Other issues related to a mechanism's design include a determination to use deadbands or to develop an index of service quality indicators (versus the use of individual indicators), the use of symmetric (versus asymmetric) schemes, and an identification of the types of events that should be excluded from incentive schemes. The resulting control will be specified in a *price cap formula* and associated rules and definitions.

Price signals - See *price mechanism*. The way changes in price affect resource allocation; i.e., an increase in demand for a product will push its price up and signal increased use of resources to produce this product. However, price signals work poorly when inflation is high, and changes in *relative prices* are more difficult to discern.

Price stability - A macroeconomic objective involving a low inflation rate.

Price structure - See *rate design*

Price taker - Those firms, usually smaller ones, unable to influence price.

Prices - The money charged and paid for goods and services.

Pricing: Setting the price structure of a product or service through access-based methods, like a monthly fee, or usage-based methods, like per-unit charge. The rate design provides signals to consumers and allows the supplier to recover costs.

Primary carrier - The designated long distance company for a particular phone line.

Primary distribution, primary distribution feeder - Part of the delivery system for energy and generally supplying high rather than the lower voltages distributed to retail customers. See *primary voltage* below.

Primary voltage - The voltage of the circuit supplying power to a transformer, in contrast to the output or load-supply voltage, which is called secondary voltage and which is generally the lower voltage supplied to retail customers.

Privacy - The right to choose to be left alone and to control access to information about oneself.

Private benefits - The advantages of an economic activity at the level of an individual person or decision-making unit. In addition these benefits can be aggregated over individuals to find the private benefits for a group, e.g., *consumer surplus* for demanders in a market.

Private costs - The disadvantages of an economic activity at the level of an individual person or decision-making unit. In addition, these costs can be aggregated over individuals to find the private costs for a group, e.g., *producer's surpluses* in a market.

Private Enterprise: Use of non-government owned firms to supply products or services.

Private goods - Those that are consumed and others do not benefit; i.e., one person's consumption means the good will not be available for another person's consumption.

Private interest - Behavior that reflects attention to personal or private benefits.

Private sector - That portion of an economy where decisions are made by managers of non-state enterprises and private investors.

Private sector investment - Spending on capital goods by businesses and individual investors rather than by government.

Privatization - The sale of a government's ownership *shares* in businesses to private investors. The value of those *shares* will depend on the net present value of expected cash flows from the assets that are sold.

Privatization: The process of moving from a government-owned system to a privately-owned, (for-profit) system.

Privatized utilities - The outcome of *privatization* in infrastructure sectors. Provision of service by a privately owned enterprise rather than by a government entity.

Procedural fairness - Open and transparent due process. The process should include opportunities for stakeholder participation, adherence to announced schedules and consistency over time.

Process innovation - The use of new technologies in a production process.

Process: Method used to obtain results. This can include procedures, descriptions of activity flows, or a specified sequence of tasks.

Producer goods - Those capital goods involved in production; e.g., machinery.

Producer price index (PPI) - A statistical measurement of the cost for a typical set of raw materials and other inputs being purchased by firms.

Producer surpluses - The difference between the minimum price a producer is willing to accept for a given quantity of a good and the price actually paid by a buyer.

Product life cycle - The different stages of a product or product line: Development, introduction, growth, maturity, and decline.

Production - The output of goods and services.

Production possibility boundary - The combination of goods a country can make with resources fully employed in a given time period. Also known as the *production possibility frontier* (PPF).

Production possibility frontier (PPF) - See *production possibility boundary*

Production targets - Output goals.

Productive capacity - A firm's output if all resources are optimally employed to meet the highest production levels possible. Fixed inputs (like physical capital) are usually the binding constraint limiting production.

Productive efficiency - Producing output at least cost. The term goes beyond engineering efficiency to include the appropriate input mix given input prices: inputs are utilized so that the ratio of the marginal products is equal to the ratio of input prices. In a *perfectly competitive market*, this would be where firms are producing at the lowest unit cost, where $MC = AC$.

Productivity - An index of efficiency, involving a ratio of outputs to inputs. Total factor productivity divides output by inputs, where the weight given the quantity of inputs is the price paid per unit input. Sometimes, output divided by labor is used as a measure of productivity, but labor productivity is only a partial measure of the efficiency of an organization, since greater output could also be due to having additional complementary inputs—such as capital or materials. Measuring inputs and outputs can be very difficult.

Productivity growth - The rate of change of a specific *productivity* index. The number depends on the underlying rate of technological change and improvements in product quality. Different sectors have different opportunities for productivity growth.

Productivity measurement - Technique for calculating the effectiveness of resource use by an organization or enterprise. This can be particularly difficult for service industries where consumers are part of the production process. See *productivity* and *productivity growth*.

Profit – In economics, *profit* is the above normal return to a firm resulting from innovation, market power, or fortunate circumstances (luck). Accounting profit is often called *net income*. Some view *profit* as the reward for bearing uninsurable risks associated with production.

Profit and loss statement - A record of a firm's activities over a period of time. In contrast to the balance sheet, which indicates financial position at a moment in time, the profit and loss statement considers how well a firm has operated over a given time period, showing the revenues and expenses. The net of these is the accounting profit earned. Also called *income statement*.

Profit margin - Profit as a percentage of turnover (or sales).

Profit maximization - Making the largest surplus of revenue possible over cost. Profit is maximized when *marginal revenue* equals marginal costs.

Profitability ratios - These include the return on total assets, return on capital employed, return on equity, *net profit margin* and net asset turnover and are used to assess the profitability of a company.

Profits, windfalls - Accounting Profit (or Net Income) reflects a firm's financial performance for a particular year. If those profits are not viewed as due to excellent entrepreneurial decisions or risk-taking activities but to "luck", the profits might be labeled as *windfalls*. For example, if a domestic firm pumps petroleum and a war reduces access to external sources, the domestic price could sky-rocket – resulting in high returns for domestic producers. Political bodies will be tempted to tax those returns since socially, the returns may be viewed as unjust or unfair.

Profit-sharing regulation - Under *rate of return* or *price cap regulation*, limits may be placed on returns. Sharing rules can be used to provide incentives for cost containment. Consumers immediately receive some benefit from efficiencies achieved by the firm. Sometimes referred to as hybrid schemes. See *price cap excessive returns*.

Progressive tax - One that takes an increasing proportion of income as income rises; e.g., marginal income tax rates increase with the amount of income earned.

Promotion campaigns - Ways to interest people in the purchase of a product or service.

Property rights - Ownership rights.

Proportionate return - An arrangement that allows telecom operators a proportionate share of incoming and outgoing calling traffic.

Protectionism - Most commonly used to describe steps taken by countries to protect their domestic industries from foreign competition (imports).

Provider of last resort - A legal obligation of utilities to provide service to customers denied service by others.

Prudency: A test used by regulators to evaluate the justification for particular corporate activities, used for cost of service and price cap regulation. The test checks whether an investment or outlay is reasonable based on principles of cost minimizing--thus promoting frugal behavior by managers. It should not be an after-the fact evaluation, but one that utilizes the information only available at the time of investment or outlay decisions, including expectations about the future. However, the test does assess what managers should have known and should have considered when they made the decision in question.

Prudential ratios - The *liquidity* ratios of banks considered safe.

Public benefits - The advantages of an economic activity at the level of a society or community.

Public benefits fee (PBF) - A tax created by the Wisconsin State Legislature to fund "Utility Public Benefits," energy assistance for income-qualified households, expansion of state *energy conservation* and efficiency programs, and support for development of renewable energy sources.

Public compensation - An action by a supplier, such as siting a production plant or obtaining rights of way may require that negatively affected parties receive money to compensate them for adverse consequences.

Public corporations - State owned industries.

Public Enterprise: An incorporated or large unincorporated enterprise in which public (governmental) authorities hold a majority of the shares and/or can exercise control over management decisions.

Public expenditure - Government spending for the general benefit.

Public goods - Those that are consumed jointly by many without any loss in availability or quality; e.g., a lighthouse. These goods are not provided in pure free-market systems because, once provided, it is impossible to restrict or exclude consumption.

Public interest - A term that is difficult to define with precision, but it generally is intended to refer to the common good. See *public interest goals* for examples.

Public interest goals - In terms of electric utility regulation, these include 1) equity among and within social classes and generations, 2) a balance between long- and short-term goals, 3) protection against abuse of monopoly power, 4) general protection of the health, safety and welfare of people and the environment.

Public interest theory of regulation - Explains government intervention in markets and associated regulatory rules as responses to *market failures* and *market imperfections*. This theory argues that regulation promotes the general welfare rather than the interests of well-organized stakeholders.

Public limited company - One that exists as a separate legal entity to protect shareholders from unlimited liability.

Public phone - A pay telephone for the public, owned and operated by the local telephone company or by other firms connecting to the network.

Public sector - That portion of an economy under government control.

Public switched telephone network (PSTN) - The telecom network, consisting of all major telecom operators. The interconnections and financial arrangements allow calls to all similar networks.

Public telecommunications network - One used wholly or in part to provide public telecom service.

Public: Availability of shares to investors in the financial market. Privately-owned, publicly-traded firms include investor owned utilities. Also, the term is used to refer to citizens in general, as when a meeting is “open to the public”.

Punitive injunctions - A court order or regulatory ruling that restricts or halts current activities. The sanction can have severe economic consequences for the offending party.

Pure economic rent - The reward obtained from any factor of production characterized by a completely inelastic supply.

QOS Standard: Quality of Service Standard. See Quality Standards.

Qualified (eligible) customers - Those with the legal capacity to conclude supply contracts and undertakings.

Qualifying facility (QF) - Independent power producers in the U.S. that are allowed under PURPA (Public Utility Regulatory Policy Act) to sell their electricity output to the local utility at *avoided cost* rates. To qualify, suppliers must produce their energy with a specified fuel type, either cogeneration or renewables, and meet certain ownership, size, and *efficiency criteria* established by the U.S. Federal Energy Regulatory Commission (FERC).

Qualitative controls - Controls to limit the nature or variety of an item rather than its quantity; e.g., regarding capital, a qualitative control would limit the type of loans but not the amount of lending.

Qualitative lending guidelines - Bank directives to encourage or restrict loans to particular groups.

Qualitative research - Collection and organization of information using non-statistical techniques to identify patterns that can help explain behavior or outcomes. For example a case study might contain impressions or tentative conclusions based on interviews and interpretations of institutional constraints.

Quality incentives - Under *price cap regulation* or *rate of return regulation*, the agency could introduce quality targets and reward the supplier based on achieving these objectives. The process involves establishing appropriate rewards and penalties (which also requires some assessment of customers' willingness to pay). See *quality measurement*.

Quality measurement - The process whereby service characteristics that are valued by consumers are identified and quantified. The focus should be on dimensions of quality that can be expressed as objective, observable, and verifiable performance measures. The process involves selecting indicators to use in an incentive scheme; determining the number of measures to be included in the scheme; and determining the *benchmarks* to be used to compare the utility's performance (yardstick approach where a company's performance is compared to that of peer companies).

Quality regulation - Establishing procedures for monitoring and rewarding service quality. For example, targets might involve improvements in electricity reliability, or reduced noise in a *telecommunications* system. See *quality incentives* and *quality measurement*.

Quality standards - Targets set by the regulator (often in collaboration with suppliers—who have more knowledge about the costs of meeting those targets). Through the adoption of appropriate incentives, these targets can then be incorporated into *quality regulation*.

Quality valuation for customers - Determining consumers' *willingness to pay* for higher quality service is a difficult task for both utility managers and regulators. Higher standards generally result in higher costs that translated into higher prices for services, thus reducing access of low-income households to those services. Regulators can address that problem by authorizing alternative providers to supply lower quality services at lower prices than the incumbent utility. Another option is to allow the carrier to offer diversified services, if such services lend themselves to differentiated tariffs and the targeted group for the lower-price, lower-quality services can be identified.

Quantitative controls - Regulations that constrain activities to meet specific, measurable targets. Also, controls to limit quantity supplied, as in rationing.

Quasi-rent - A short-term economic benefit to producers associated with a temporary inelasticity of supply.

Quick ratio - Also called the *acid-test ratio*, this is a measure of the short-term *liquidity* that deducts stock and work-in-progress from current assets. This cautious assessment recognizes that stock cannot always be readily converted into cash at full value.

Radio spectrum - The range of wavelengths for broadcasting radio and television signals (from about 100 KHz to about 400 GHz).

Ramsey pricing - This version of *price discrimination* is sometimes called "Second Best Pricing" since it deviates from "First Best" (*allocatively efficient*) Pricing where $P = MC$. If resale can be prevented, consumers in different markets with different elasticities can be charged different prices. However, the prices are set so as to yield only normal profits, so the prices are less than under unregulated price discrimination. Under Ramsey Pricing, resource misallocations (or distortions from pricing above MC) are minimized but not eliminated. Note that customer groups with the relatively inelastic demands pay the highest prices, so that those without substitutes pay the most per unit. Thus, this approach may violate principles of fairness, as evaluated by regulators. Alternative *tariff structures* for covering *fixed costs* include *multi-part pricing*. See also *rate design*.

Ratchet effect - A description of the human response to changes in welfare; i.e., a positive response to improvement and a negative one to diminishment. Once a particular level of satisfaction is achieved, this establishes a new psychological "floor" to downward pressures. The effect is illustrated when incomes drop but consumers are unwilling to change their consumption patterns because they are accustomed to particular lifestyle or standard of living. In the long run, consumers may be forced to adapt to the new circumstances.

Rate base - Defined in law or by the regulator as the *regulatory asset value* on which the *allowed rate of return* can be earned. This may be calculated according to a variety of accounting methods: fair value, prudent investment, reproduction cost, or original cost. Depending on the jurisdiction, the Rate Base can include working capital and *construction work in progress*. It can be adjusted to take into account accumulated depreciation.

Rate base, value-based approach - An approach to calculating *rate base* that focuses on market based values—for assets or underlying equity values. Care must be taken to avoid “circularity”, since the value of an asset is the present value of the cash flows. So once the output price is set, the value of the assets is determined, and vice versa.

Rate case - The process whereby the utility and affected parties present information and proposals for future prices and quality targets. The appearance of a utility before a regulatory authority can be very formal (almost like a court case) or contain informal workshops that facilitate the exchange of ideas and development of consensus for determining the rates to be charged to customers. The latter can take the form of *all party settlements*.

Rate class - Customers grouped according to certain characteristics. They may pay a different rate than other customers, based on cost causation or cost allocations.

Rate design - The type of prices used to signal consumers and recover costs. For example, these can involve *block pricing*, *multi-part prices*, *seasonal rates*, *time of use rates*, and *bundled services*. See *tariff structure*, and *rate structure*.

Rate level - The average price a utility is authorized to collect for electricity. A number of *rate designs* could yield the same average price.

Rate of interest - See *interest rate*.

Rate of return - A firm’s profit expressed as a percentage of its assets.

Rate structure - The schedule and organization for customer billing. See *rate design*.

Rate surcharge - An additional charge on a customer’s bill used to adjust prices. Sometimes, such temporary charges are imposed to cover costs associated with a particular event (for example, costs resulting from a disaster, such as a hurricane). Such a surcharge could also be applied in anticipation of a general rate increase to avoid *rate shock* or to address unique financial problems facing the utility.

Rate survey - A comparison of prices for a particular service across different firms.

Rate-of-return regulation - A regulatory method that provides the utility with the opportunity to recover prudently incurred costs, including a fair return on investment. *Revenue requirements* equal Operating Costs plus the *allowed rate of return* times the *rate base*. This mechanism limits the profit (and loss) a company can earn on its investment. *Regulatory lag* and special incentive plans are often used to offset the disincentive to minimize costs under this mechanism. See *cost of service regulation*.

Rates, block - A price that applies to specified amounts of service. See *block rates*.

Rates, demand - Charges for electric service as a function of the customer's rate of use or maximum demand (expressed in kilowatts) during a given period of time such as the billing period.

Rates, flat - Constant per unit price, regardless of usage levels.

Rates, lifeline - A low or reduced flat rate for service (up to a particular level of monthly consumption) with higher *block rates* thereafter. When used to target particular groups, such as the poor or aged, the rates are available to qualifying (usually low-income) customers. These rates are sometimes subsidized by an increase in rates for other *customer classes* (*Cross-subsidy*).

Rates, seasonal - Varying service rates according to the time of year (summer or winter). These can be cost-based, to the extent that peak demands (driving installed capacity) are seasonal in nature. Thus, such rates can provide efficient signals to consumers. Seasonal rates can be viewed as a very crude version of *rates, time of use*.

Rates, step - A price per unit consumed based on specified levels of use or demand. See *block pricing*.

Rates, time-of-use - Prices for services that vary with the time of day or night a customer uses it. These rates reflect the different costs a company incurs in providing service during peak and off-peak periods. Whether a particular customer benefits from time-of-use rates depends on the percentage of total consumption used during peak periods. Nevertheless, if metering costs are low, such rates are much more efficient than uniform (unvarying) prices, since the latter do not signal the true *opportunity cost* of serving peak and off-peak demands.

Rates, unbundled - Itemizing charges for individual services. This gives consumers greater choice regarding the mix of products to consume than in the case of *bundled* products.

Ratio analysis - A tool for analyzing the financial performance of a company by calculating ratios from their published accounts, including consideration of profitability and short- and long-term liquidity.

Reallocation of resources - Application of land, labor and capital to new, different uses – leading to a change in the output mix.

Real-time pricing - Charging for utility services according to its cost at the time of demand. Metering for instantaneous usage involves costs for the equipment and signaling devices, but for large users who can adjust their demand, such rates promote efficiency. See *time of use pricing*.

Redistributive effects - The outcome when money received from one group is given to or invested in others by government, as through taxation. Changes in *rate design* or in Infrastructure Expansion also affect real standards of living and thus have impacts on the distribution of income.

Refunds - Money returned to customers to void a sale, correct an overcharge, or adjust rates.

Regional transmission organization (RTO) - An independent organization that manages transmission facilities owned by different companies in a large, contiguous geographic area. See *ISO*

Regression analysis - Statistical studies that attempt to explain changes in one variable (such as quantity demanded) in terms of changes (or differences) in other variables (such as price or income.)

Regressive taxes - Those garnering a higher proportion of income from the poor rather than from those who are better off. For example, an identical (lump sum) tax on each citizen would take a higher proportion of income from the poor than from the wealthy.

Regulated supplier - A firm that is subject to regulation.

Regulated third-party access - A system giving eligible customers a right of access to transmission and distribution systems on the basis of published tariffs.

Regulated utility - One subject to regulation to achieve social or political objectives (such as the control of monopoly power or to benefit favored customer groups). As such, it is expected to charge nondiscriminatory, fair rates and render safe, reliable service to the public on demand. In return, it is generally free from substantial direct competition and is permitted to earn, although not guaranteed, a fair return on investment.

Regulating risks - Rules that affect the health and safety risks associated with producing or consuming products. The terms could also apply to government placing limits on the financial structure of a firm – limiting the risk of bankruptcy or financial stress to meet regulatory objectives.

Regulation - The process whereby the designated government authority provides oversight and establishes rules for firms in an industry. Regulation places constraints on behavior, establishes good (or bad) incentives, and addresses issues that are politically contentious. Decisions are implemented through a rule or order issued by an executive authority or *regulatory agency* of a government and having the force of law.

Regulation by contract - A form of regulation in which the regulatory authority (who could be a mayor or a regulatory commission) monitors and enforces a license. In contrast to the Anglo-American tradition of independent regulatory commission, the French tradition involves a well-defined concession agreement or contract. Many Latin American nations have a combination of the two mechanisms, with an independent commission ensuring that the terms of the contract are met (including price revisions based on the initial contract). Some analysts view this blend of the two approaches as showing promise.

Regulators - A term used to refer to members of a government agency responsible for monitoring sector performance, addressing stakeholder concerns, and implementing government

policies. An individual regulator may serve as a member of a commission that is responsible for balancing the interests of producers, consumers, and political officials.

Regulatory accountability - A *regulatory agency* follows procedures that are periodically reviewed by another government organization, such as a legislative committee, a Ministerial task force, or a government accounting office. The review attempts to ensure that resources are being used effectively and that the agency is implementing public policy. In addition, appeals procedures for decisions (for example, through the judicial system) provide another review mechanism—this time regarding whether the law is being applied correctly. Such oversight provides a check on the *independent regulatory commission*—giving legitimacy to decisions.

Regulatory agencies, independence - To be effective, the government agency providing regulatory oversight of a sector must have some autonomy from daily political pressures. Such independence facilitates long-term decision-making and can promote consistency in regulatory rulings. Without some degree of independence, it is difficult to avoid basing decisions on political expediency.

Regulatory agency - A government agency that oversees and sets rules for a specified type of business in a sector.

Regulatory announcements - Decisions that are made public to all affected parties involve statements to the press. If particular groups know the results of a review process before others, those with the “inside information” have an advantage. Good announcements explain the basis for the regulatory decision (or ruling) and the implications for affected parties.

Regulatory asset base - See *rate base*

Regulatory Assets: Costs incurred by regulated firms and approved by state regulatory agencies for recovery over a period of years. Regulatory assets might include such things as the costs of energy efficiency programs and low-income energy assistance programs, and deferred fuel costs. Instead of being treated as expenditure outlays in a single year, these costs are booked as assets and are depreciated over time.

Regulatory bodies - See *regulatory agency*.

Regulatory capture - When the *regulatory agency* only hears from particular stakeholders, its decisions are likely to reflect only the information provided by those groups or their narrow concerns. Such decisions might result in excessive profits for the *regulated utility* or subsidies for powerful consumer groups.

Regulatory collusion - Collusion involves a conspiracy or tacit (and secret) agreement between parties. Absence of transparent processes can facilitate such “back-room” agreements—between the regulatory and a stakeholder or between stakeholders. When such agreements are made in the open, they can be labeled as “cooperation”, as in the case of *alternative dispute resolution*.

Regulatory competition - Many nations have multiple jurisdictions with national, state, and

(sometimes) local regulatory commissions. There is often a lack of clarity for the roles and responsibilities for these agencies. When a new (often, unanticipated) issue arises, each agency is likely to view the actions of other commissions as over-reaching their authority. The courts or new legislation may clarify the roles. Environmental regulators may impose rules that have implications for the sector regulator, and vice versa—leading to disputes and interagency conflicts.

Regulatory coordination - To avoid *regulatory competition*, agencies can establish task forces or other mechanisms for identifying and resolving issues that might arise between jurisdictional boundaries (across states or between state and federal authorities). Such cooperation can serve as a way to clarify the division of responsibilities and identify regulatory instruments that will most effectively meet economic and social objectives.

Regulatory drift - Excessive reliance on the *status quo* that reflects a very passive stance. Rather than being proactive, such a regulatory style does not anticipate of issues.

Regulatory failure - When regulations are shown to be the cause of weak sector performance (where economic objectives are not being realized), the commission promulgating the rules has failed in its legal mandate. The cause can be due to undue political interference that results in an emphasis on short term outcomes (myopia), lack of expertise in the design of incentives, *regulatory capture*, or other reasons.

Regulatory governance: Regulatory governance includes the legal mandate given to a government agency, resources available for policy implementation, the organizational design of the agency, and the processes adopted by the agency. These factors all affect regulatory activities and public perceptions regarding its transparency, fairness, and access to citizen input. If there is no clarity in terms of which agency is responsible for implementing particular policies, public policy is likely to be compromised by intra-governmental rivalries.

Regulatory guidelines - Rules established by regulatory authorities that provide direction to those engaged in activities under its jurisdiction. These rules may have the effect of law or merely be recommended procedures.

Regulatory lag - Length of time between *rate reviews*. Under *price cap regulation*, the review period is specified in the decision—generally in the three to five year range. Under *rate of return regulation*, the lag is often endogenous. Either the regulator or the utility can request a hearing if profits are perceived as excessive or too low. Uncertainty about the exact length of the lag can serve as an incentive for cost-containment.

Regulatory objectives - Regulatory commissions have goals—usually identified in the enabling legislation. Broad objectives include fairness, reasonable prices, network expansion, and service reliability. Specific goals might include: constraining market power (where prices are “too high”), avoiding prices that are “too low,” providing suppliers with the opportunity to obtain adequate returns on investment (meeting the capital attraction standard), promoting cost containment (production efficiency), creating incentives for optimal quality, and encouraging entry where efficient.

Regulatory procedures, fairness of - Those affected by regulatory decisions evaluate the evenhandedness of the regulatory process. Stakeholder judgments regarding the fairness of procedures depend on transparency, adherence to schedules, equal treatment, and opportunities to participate in workshops or hearings—to present their case or to challenge the information presented by others.

Regulatory reform - A change in the way a *regulatory agency* operates or a change in regulation where the stated purpose is to improve performance on the part of the agency or its regulated industry. In any situation where a number of changes are promoted, some may be the result of political compromises that actually conflict with the broad thrust of the reform.

Regulatory space - Analytical construct defined by the range of regulatory issues subject to public decision. Proponents claim that its dimensions and occupants can be understood by examining regulation in any particular national setting, and by analyzing that setting in terms of its specific political, legal and cultural attributes.

Regulatory/government changes - After elections, a change in governing parties can lead to new public policies or greater emphasis on particular *regulatory objectives*. See *regulatory reform*.

Relative prices - The price of a product or service relative to the price of another product (or relative to a general price index).

Reliability - Reliability has two components: adequacy and security. The former involves ensuring that supply is available to meet demand at dispersed points of consumption. In network industries, storage can be costly—requiring adequate capacity to *transport* services (electricity or *telecommunications* signals) to final consumers. Security is characterized by the system's ability to withstand sudden, unanticipated disturbances, as when a transmission line suddenly becomes unavailable or particular links or production nodes are disrupted.

Renewable energy resource - Use of non-fossil fuels to generate electricity (e.g., wind, solar, biomass); these are sometimes referred to as *green options*. They are often limited in the amount (and *reliability*) of energy obtained in a given time period. Utility applications for *renewable resources* include bulk electricity generation, on-site electricity generation, distributed electricity generation, and non-grid-connected generation. Demand-reduction through energy efficient technologies is a substitute for energy—whatever the source.

Renewable resources - Those that can be replenished naturally. Examples include hydroelectric power, geothermal energy, solar, and wind power.

Rent - The payment made for the right to use an asset owned by another person or organization.

Replacement Cost: A procedure for valuing an asset based on what it would cost to duplicate (or replace) the asset if it were acquired today. With current cost accounting, such costs may be determined either through the application of current prices to comparable assets or through the application of an inflation factor to the original cost. On the one hand, this approach to

determining components of a rate base yields values that more closely match the economic value of assets during periods of high inflation. On the other hand, this approach enables investors to obtain higher cash flows than would have been the case if the original (historical) cost approach were used to determine the rate base (for rate of return regulation).

Re-regulation - Regulation applied after the *restructuring* of a previously vertically integrated utility. The term could also be applied to a situation where a reduction of regulatory oversight (and an increase in competition) was deemed to weaken industry performance. Such an outcome often leads to calls for either new regulations (reflecting an understanding of the factors responsible for *regulatory failure*) or a return to the previous regulatory regime.

Reseller - A company that purchases services from a supplier and markets those services to final customers—often including some value-added services. An example of a reseller would be a company that buys or leases transmission lines or time on telephone lines and then resells these services.

Reserve margin - As applied in the electricity industry, the difference in a utility's net production capability and its maximum load requirements for peak demand. In some cases, to promote *reliability*, regulators will require a particular *reserve margin*.

Resource allocation - This term refers to a particular use of land (natural resources), labor (human capital), and capital (buildings and equipment)—applied to the production of goods and services by a firm, sector, or economy as a whole. See *resource efficiency*.

Resource efficiency - Using the least amount of resources necessary to produce a product or service. The most efficient *resource allocation* will depend on the *relative prices* of the inputs, where these prices reflect the opportunity costs of utilizing those resources.

Restrictions on competition and/or incumbent under regulation - Constraints placed on suppliers by an appropriate regulatory body, presumably with the justification that such limitations promote efficiency or other regulatory objectives.

Restructuring - The separation of functions in a vertically integrated firm, leading to the *unbundling* of services. The owners and operators of the newly configured firms are now distinct entities. Such a policy can arise if segments of the industry are viewed as potentially competitive. Also, such vertical disintegration may be done to achieve better information regarding performance of components in the vertical chain. Alternatively, *accounting separations* may be required instead of moving to more dramatic restructuring.

Retail competition – A system that permits customers to buy energy or *telecommunications* services from more than one retail provider. See *reseller*, as applied to final consumers rather than intermediate consumers.

Retail deposit - A deposit of money with a retail bank, which tends to deal with individuals and small businesses.

Retail energy market - One where electricity and other energy services are sold directly to end-users.

Retail price index (RPI) - A measure of inflation from the perspective of household consumers. It shows the change in prices for a basket of goods consumed by households. In the U.S., known as the Consumer Price Index. See *price index*.

Retail price index X (RPIX) - As an adjusted measure of retail price inflation in the U.K.; this is the *price index* with the effects of changes in interest rates removed.

Retail price index Y (RPIY) - This is another adjusted measure of inflation, one that considers the effects of indirect taxes as well as changes in interest rates (used in the U.K.)

Retail wheeling - Where retail customers can purchase electricity from any supplier, the local utility is required to allow outside generators to wheel their power over the local lines. The terms and conditions for such access may be regulated or determined through bilateral negotiations.

Return on capital employed (ROCE) - See *return on net assets (RONA)*.

Return on net assets (RONA) - Sometimes called return on *capital employed* (ROCE), this rate measures general management performance in relation to the capital (total assets minus current liabilities) invested in the business. Essentially, this number represents the *return on equity*. RONA is calculated by dividing net profit before interest and taxes (NPIT) by total *capital employed* times 100 to give a percentage return.

Return on total assets (ROTA) - A measurement of profit in relation to the total assets invested in the business, regardless of how these have been financed, calculated by dividing net profit before interest and taxes by fixed and current assets multiplied by 100 to give a percent. The result indicates the profit the company has made as a percentage of the total amount invested, where the assets are financed by equity and debt.

Return to scale - The connection between changes in production input and resulting change in output. See *increasing and decreasing returns to scale*.

Revenue - Money received for the sale of a good or service. *Total revenue* divided by quantity sold is the *average revenue* (average price). The *rate design* determines the sources of revenue from monthly fees and different customer groups.

Revenue cap - Similar to a *price cap*, except the constraint is placed on *total revenue* rather than a particular price or basket of prices. The formula can include an inflation adjustment and an efficiency (or, X) factor. In the case of electricity, the distribution or transmission company is not harmed financially when consumers engage in energy conservation. Such caps provide a disincentive for increasing quantity sold (perhaps through quality enhancements) since such developments do not benefit firms under a Revenue Cap. This regulatory mechanism is often applied to links in a network, where most of the costs are fixed in nature.

Revenue forecasting - In a *rate review*, future sales are estimated in order to gauge the financial implications of alternative demand scenarios. This information is then incorporated into the analysis of proposed *rate designs*. The associated demands are also forecast to assist in the development of a utility's capital expansion plan.

Revenue requirements - In *rate of return regulation*, the *total revenue* a utility must receive to cover its costs.

Revenue sharing: A form of hybrid regulation. With this mechanism, the regulator allows the operator to keep some portion of the revenues it receives (beyond a pre-specified point) from selling the product or service and requires the operator to give the rest to customers, through price reductions, refunds, or increased investment in facilities or services. See Revenue Cap. In taxation, the term applies to the transfer of tax revenue from one unit of government, such as the federal government, to other units, such as state or municipal governments.

Revenue yields controls - See *revenue cap*.

Revenue-neutral policies - A government policy that does not affect the budget inasmuch as any reduction in revenue is met by an equivalent reduction in expenditures.

Rewards: Incentives designed to compensate or remunerate persons and organizations for services rendered. For example, investor returns associated with taking on different degrees of risk for investments in a company. The cost to consumers of these incentives must be balanced against the value of the improvements associated with the improved performance of the company.

Ring fencing - Regulatory rules requiring *accounting separations* so that different services provided by the same firm are treated as if they were separate companies. An example would be fixed and mobile services being provided by the same telecommunications company, where resources cannot be utilized by both service providers without arms-length contracting, reducing the likelihood of *cross-subsidization* between services

Risk allocation - Risk is borne by different parties depending on the nature of the formal (or implicit) contracts linking the parties. One principle of efficient risk allocation is that those parties best able to mitigate the risk (through portfolio adjustments or behavioral responses) should be assigned (or allocated) the risk. *Price cap regulation* tends to transfer (or allocate) commercial and production risk to investors—leading to a higher required return on their investment. *Rate of return regulation* tends to allocate more risk to consumers—leading to lower required returns for investors (but greater risk borne by customers).

Risk: The quantifiable probability distribution associated with a set of possible outcomes. For example, an investor is more likely to take on additional risk if he can expect some corresponding increase in return on his investment. He is less likely to do so if higher losses or lower returns are expected. International perceptions regarding political stability, trends in the exchange rate, and concerns over changes in environmental regulations affect investor attitudes toward making such commitments; investor attitudes, in turn, affect the cost of capital (reflected

in required interest rates on bonds and expected returns on equity investments) for those investments.

Risk-bearing economies of scale - The ability of large firms to spread risks over a large number of investors. This can result in the *diversification* of location- or production plant-specific risks—thus reducing the effective risk facing investors.

Roaming - An aspect of wireless communication that involves an automatic search among network operators for service. The customer charges for service outside the standard calling area are specified in the customer contract.

Rollover - Allowing present circumstances or regulatory requirements to remain in force past their term limit.

RPI-X regulation - RPI minus X refers to the form of *price cap regulation* developed in the U.K. and utilized in many countries. The price automatically adjusts for the previous year's retail price inflation (RPI) and for expected efficiency improvements (X) during the time period the price adjustment formula is in place. The X might be calculated using a number of procedures.

Rules of conduct - Rules, codes or regulations used to delineate acceptable activities by market participants in the interests of fairness and efficiency. For example, *codes of conduct* are established for firms participating in electricity power exchanges.

Sales - The quantity of goods or services sold in a given time period.

Sales revenue maximization - Achieved when *marginal revenue* is zero, maximizing total sales revenue is often an alternative to *profit maximization* as a business objective. Or, it may be a proxy for expanding market share.

Sanctions - Penalties established (and applied) to provide incentives for particular kinds of behavior. For example, if a utility does not respond to a customer complaint within five days, it may be required to pay a fine to the customer.

Satellite transmission - Transmitting signals from earth to a satellite and then back to a different location on earth.

Scale economies - See *economies of scale*

Scarcity - Limited resources imply that all consumer wants cannot be met. This condition characterizes all economic decision making.

Seasonal component - The variation in a time series that is explained by the time of year; e.g., the costs of various fruits and vegetables vary seasonally.

Sector Policy: Public policy establishes the legal constraints facing decision-makers and determines the jurisdictional responsibilities of different levels of government. The basic rationale is that market imperfections (market power and information gaps) and market failures (such as pollution) require some form of government intervention. Infrastructure policies tend to address three broad areas: market structure, corporate behavior, and sector performance. Antitrust regulation addresses mergers and anticompetitive behavior in the economy (including the exercise of market power). Sector policy tends to address those elements of the market structure (including the supply chain) that are viewed as natural monopolies. Government tends to intervene when economic or social problems affecting or originating from the sector catch the attention of those involved in political processes.

Self-generation facility - A facility that serves a particular retail customer's needs, generally located on the customer's premises. The facility itself may be owned directly by the customer or by a third party contracted to provide the energy for some or all of the customer's needs.

Self-regulation - Allowing an industry responsibility for its own compliance with regulatory standards. Government oversight might still be undertaken to ensure that industry performance meets social and economic objectives.

Self-service power - See *self-generation facility*.

Self-service wheeling - A means of accounting for generation produced by a utility that owns more than one facility. When excess electricity at one site is used at another, the utility is given billing credit for the excess at its other site(s), minus *wheeling* charges.

Sellers' market - One favorable to sellers since demand is growing more rapidly than supply, so prices are rising.

Semi-public phone - One owned by the local telephone company but leased by another type of business, such as a restaurant or hotel.

Service area - The geographical territory covered by a service; e.g., the area a utility system has the right or obligation to supply with electricity, delivering service to final consumers.

Service continuity and availability - These terms refer to the extent of service interruptions. See *reliability*

Service drop - The overhead conductors (wires) conveying electricity directly to the building or structure being served.

Service lateral - Underground service conductors from the street main to the first point of connection with the entrance conductors.

Service provider - One offering service over a network that it may or may not own.

Service quality, monitoring - Checking the features of the service (like *reliability* and Billing Accuracy) that matter most to customers.

Service representative - An employee who helps people set up and change service with a company; e.g., the telephone company employee who interacts with customers regarding service options.

Service specification - In networks, *interconnection* and use of service (electrical current or digital pulses) requires compatibility across providers and appliances. The technical characteristics can be determined by regulators or standards organizations.

Service-at-cost regulation - See *cost of service regulation*

Settlement rate - Regarding telecommunications, a measurement of charges incurred when traffic across jurisdictions is not in balance; i.e., flow in one direction is greater than the other.

Shadow prices - Estimated prices used when market prices do not exist. These can be imputed from behavior or binding constraints.

Shareholder - People and institutions who are joint owners of a limited company. They own equity in the company and can sell ownership shares.

Shares - Securities issued by companies to raise long-term capital; the *shareholders* have proportionate ownership in the company.

Shock - Any unforeseen or unanticipated event that strongly affects normal economic activities. For example, a hurricane can damage network components; similarly, a dramatic change in exchange rates affects price of imported inputs. Such events can affect the financial viability of the utility.

Short run - The time period with at least one factor of production (such as production capacity) that is fixed. See *long run*

Shortage - A situation of *excess demand*, where the price is below the equilibrium price.

Short-term liquidity ratios - A measurement of how well a company is managing its funds and can meet its short-term financial obligations.

Shut off - Discontinuation of service; also called *disconnection*.

Single buyer - The organization legally responsible for the unified management of the transmission system and/or for centralized electricity purchasing and selling.

Single market - The free movement of people, goods, services and capital in a designated geographical area.

Skimming - A policy of setting a high price when a product is introduced to ensure large profits before competitors can enter the market.

Slamming - Changing the long distance carrier of a customer without permission.

Smart card - A small plastic card with a magnetic strip that contains information about the cardholder or other data.

Smart phones - Telephones with internal computers that allow them to accomplish special tasks; also, phones with display screens.

Social benefits - The total benefits of an economic activity, including the spillover effects to third parties. Social benefits are the total of *private benefits* and any *external benefits*.

Social capital - A society's assets in terms of its institutions, literacy levels, attitudes, and civic values.

Social costs - The *total costs* of an economic activity, including the spillover effects to third parties. Social costs are the total of *private costs* and any *external costs*.

Social marginal cost - The full *social cost* of one extra unit of production to society.

Social Policy: A policy addressing social issues, such as poverty alleviation, education, and access to infrastructure. Such policies might focus on meeting demands for social justice, including income redistribution and infrastructure expansion to the poor and to rural areas. See Sector Policy.

Social welfare - The well being of a society, reflecting economic output and its distribution across members of society.

Socially efficient output - That level of production where the full *opportunity cost* of an extra unit is equal to the value placed by society on its consumption.

Sole proprietor - The owner of a private business who bears all financial risks.

Spare capacity - The ability to produce more with existing resources.

Speakerphone - One with a broadcast and microphone system that allows a speaker to converse without holding a receiver.

Special contracts - Any contract for utility service under terms and conditions other than those listed in the utility's published tariffs. E.g., a utility may agree to provide electricity to a large customer at a lower rate than the *tariff* rate rather than risk losing the customer. Regulators might have review authority over such contracts to ensure that other customers are not burdened by these negotiated arrangements.

Specialization - Focusing production on one or a narrow set of products or services. Alternatively, an individual might concentrate on a narrow set of productive activities.

Spectrum management - Applying policies that define rights and responsibilities for the use of the radio spectrum. In telecommunications, the management of the type and quantity of connected devices and their frequencies to prevent interference between services and to optimize the effective use of technologies to deliver the maximum overall benefit from the scarce spectrum resources (e.g., deploying a higher density of lower capacity devices compared to a lower density of higher capacity devices).

Speculation - Engaging in the sale and purchase of assets, such as especially risky securities, with the hope of making economic gains. The speculator takes a position in the asset, and bears the risk.

Speed dialing - Dialing stored telephone numbers accessed by pressing just one or two buttons on the phone.

Spillover effects - The unintended results of production or consumption, which can be positive or negative. See *externalities*.

Spinning reserves - In an electricity system, the amount of unloaded capacity on generating units that are connected to the *interconnected system* and that can be fully applied in ten minutes.

Spin-off - A new company formed by the partial breakup of a corporation so that some business units separate from the parent company.

Spot exchange rate - The actual exchange rate for currency at any given moment in time, in contrast to the forward rate determined by market participant predictions for some future time.

Spot market - That portion of a market concerned with buying and selling for immediate use. Such markets include electricity and foreign exchange.

Stakeholders - All individuals and organizations with an interest in the activities of a firm, including investors, employees, customers, the local community and government.

Standard network interface (SNI) - A special type of telephone connection box that allows diagnosis of wiring problems within the customers' premises.

Standard of living - A measure of economic welfare; e.g., real per capita income.

Standards Setting: The process whereby quality standards are established. Attention is generally given to the incremental benefits and costs of tighter standards, the ability to monitor outcomes, and the extent to which one can attribute outcomes to managerial behavior. See quality standards. In some cases the standards affect health and safety: see regulating risks.

State-Owned Enterprise (SOE): An organization that produces goods or services for sale to its clientele and that is organized in the form of a corporation or other business association and is owned by a government. See public enterprise.

Statute: A legislative act or law.

Step down - Switching electricity from a higher to a lower voltage.

Step up - Switching electricity from a lower to a higher voltage.

Stock exchange - A market for buying and selling *shares* and securities, which may have an actual physical location or may consist of traders linked by computer terminals.

Stock value - The value of a stock at a given moment in time, based on expected future cash flows and potential *appreciation* of the stock price.

Stockpiling - Accumulating a stock of goods or inputs, either through *overproduction* or as a matter of policy (in industries with highly seasonal demand). Stockpiles represent costs incurred but not yet recovered.

Stocks - Can refer to stores of raw materials or finished products or to corporate *shares* owned by investors.

Store of value - Any medium for saving or maintaining value.

Stranded assets - When changes in public policy have a significant impact on the cash flows that can be obtained from productive assets, those assets are less valuable than before the policy change. For example, if allowing additional entry into the production of electricity means that “old” plants are operated for fewer hours per year, the net cash flows associated with those plants decline. Analysts can debate whether (and when) regulatory policy changes could have been anticipated, and factored into investment decisions. On the practical side, if a *restructuring* initiative is adopted, policy-makers try to address the issue of how to deal with the lost economic values stemming from the policy change. Some U.S. states have imposed *competitive transition charges* to have consumers bear some of the burden of moving to a new *market structure* and regulatory framework. See *stranded costs*.

Stranded benefits - As in the case of *stranded assets*, the values of assets could be affected in a positive way by a policy change. Because of advantage of location or excellent operating performance, a generating unit might have a *market value* in excess of its book value. If the current cash flows obtained from the plant are based on historical book value rather than the market value, the owner of the asset might be in a position to receive higher cash flows under a scenario involving *deregulation*. This raises the issue of who has claims on the increased value: the *stranded benefits*. The term has been used by some in reference to a completely different issue. Socially beneficial programs and goals could be compromised or abandoned by a restructured electric industry; e.g., fuel diversity, environmental protection, energy efficiency,

programs for low-income ratepayer assistance. Thus, such benefits could be lost or “stranded” under a policy change.

Stranded costs - Stranded Costs are costs that the operator has properly incurred and that the operator does not have a reasonable opportunity to recover given the introduction of competition or some other (unanticipated) policy change (eg. new environmental regulations that shut down a generating facility). Stranded costs are calculated as the difference between sunk costs (usually book values) and the present value of expected operating earnings from those sunk assets. Thus, stranded costs represent lost revenues or reductions in asset values experienced by a regulated firm when new policies alter a well-defined regulatory contract. The utility will seek to recover those costs from remaining customers in the new policy environment. See *stranded assets*.

Structural separations- Structural surpluses - Quantity supplied exceeds quantity demanded because a minimum price has been set above the equilibrium price.

Sub-metering – Re-metering and resale of purchased energy or water by a utility customer through privately owned or rented meters.

Subscriber - A person who contracts for publicly available *telecommunications* services.

Subsidy - A form of income re-distribution. This can be a direct grant to a private person or company to assist that entity (as with government payment to cover the charge for building a link that allows a customer to access the network). Or, it can be provided in the form of a reduced price for a regulated good or service. A *subsidy* can be *transparent* or it may be hidden, or not well understood. Often, those receiving subsidies are not low income citizens. A government *subsidy* may also be provided a supplier to cover costs of servicing high cost rural customers. Or, a uniform price to customers (regardless of the cost of service) will involve a *cross-subsidy*.

Subsidy-free pricing - Prices such that no consumer (or group of consumers) could obtain service at a lower price from an alternative supplier (or technology). On the other hand, if some consumers pay more than the cost of the next best alternative, then (if the supplier is earning normal economic profits) other consumers are paying less than the total incremental cost of serving them (ie. they are receiving an implicit *subsidy*).

Subsistence - The minimum income necessary for survival.

Substitutes - Goods or services that take the place or function of another so that consumers can choose between these while maintaining the same degree of satisfaction. When the *cross-price elasticity of demand* has a value greater than 1, goods are considered close substitutes.

Substitution - Buying one good or service in place of another.

Sunk cost - A cost that has already been incurred and so cannot be avoided by any strategy going forward.

Supply - The amount (or quantity) of a good that producers are willing and to sell at a given

price.

Supply curve - A diagram depicting the relation between price and quantity supplied; i.e., for a product with *increasing opportunity costs*, the higher the price, the greater the quantity producers are willing to supply.

Supply curve, movements along - Changes in price causes changes in the quantity supplied. This is to be distinguished from shifts in the *supply curve* (due to changes in input prices, the number of producers, or the production technology).

Supply shock - An unexpected change in supply beyond the control of the company or economy, for example, due to an unpredicted input price increases.

Supply-side economics - The branch of economics concerned with the productive potential of an economy and ways to increase it.

Surcharge - An extra fee added to other charges.

Sustainable development - Development that can be supported by the environment into the future by ensuring that resources are not depleted or permanently damaged. Since sustainability depends on technology and innovations change resource constraints, defining the term with precision is quite difficult.

Switching - Can refer to a shift to another electrical circuit by means of a switch or to customer's choosing to receive service from another company.

System benefits charge - A charge on a consumer's bill from an electric distribution company to pay for the costs of certain *public benefits* such as low-income assistance and energy efficiency.

System user - Anyone supplying or receiving energy via a transmission or distribution system.

Systematic risk - The risk that is common to an entire class of assets. It cannot be diversified away, except to the extent that another class of assets can be included in the portfolio. Risks associated with events affecting individual firms (such as a fire that destroys production facilities) are diversifiable. See *Capital Asset Pricing Model*.

Tacit collusion - Implicit coordination of pricing or other behavior that facilitates the exercise of market power (or restriction of competition) by a group of firms. Unlike a conspiracy, there are no secret meetings and no explicit agreements. Coordination is achieved through announcements, signals of intentions, or industry understandings regarding *price leadership*.

Takeover - Acquisition of another firm. When the purchase of a controlling interest in a company goes against the wishes of its Board of Directors, the action is called a hostile takeover.

Taking - Claiming property through government action without just compensation. The determination of what is “fair and reasonable” can be very contentious, as when deciding payments for utility *rights of way*.

Target return policy - Setting price to achieve the profit being sought. This technique focuses on stabilizing returns, and can involve strategic manipulation of accounting information.

Target standards - Technical characteristics of the product (including service penetration and *reliability* levels) set by the regulator. These objectives might be set in collaboration with customers and suppliers to ensure that the incremental benefits equal the *incremental costs* of compliance.

Targeted marketing - Aiming solicitations at those who have previously expressed an interest in the product being sold or who meet certain criteria.

Targets - Goals, quantifiable objectives.

Tariff - A rate, charge or condition approved by *regulatory agency* for a regulated utility; the term is also applied to government taxes on imported goods.

Tariff rebalancing - Bringing prices in line with costs. Historically, some customers might have been served below cost or without making a contribution to covering shared *fixed costs*. Other customer groups (or those consuming other products) might have faced prices far in excess of the costs of serving them. Rebalancing aims are reducing (or eliminating) such *cross subsidies*.

Tariff schedule - A detailed description of the *rate design*. Also, a document specifying the lawful rates, rule and conditions for supplying utility service to the public.

Tax effect on cash flow - The explicit calculation of after-tax cash flows. Income taxes will (generally) reduce cash flows. *Normalization* for accelerated *depreciation* can increase after-tax cash flow unless the regulator adopts a policy to *flow through* the tax savings to today’s customers.

Tax incidence - The burden of a tax.

Taxation - Process whereby the government collects funds through a variety of mechanism including surcharges on transactions, duties on particular goods, payments based on property values, or on corporate and personal incomes.

Taxes, income - Taxes on the money earned by individuals through wages, salaries, interest payments, and dividends. Inadequate record-keeping to ensure compliance can lead to under-reporting of income and the evasion of taxes. Taking advantage of legal loopholes is tax avoidance, not tax evasion.

Taxes, windfall - See *excess profits taxes*.

Taxes: A fee charged ("levied") by a government on a product, income, or activity. If a tax is levied directly on personal or corporate income, it is a direct tax. If tax is levied on the price of a good or service, it is an indirect tax. The purpose of taxation is to finance government expenditure.

Technical economies of scale - Lower costs per unit of output explained by expansion of all factors of production. These are labeled as "technical" because they are based on the underlying production function rather than on changes in input prices or the quality of inputs as scale increases. See *decreasing average cost* and *scale economies*.

Technical efficiency - Producing a given quantity of output with the minimum number of inputs. This term is distinguished from *production efficiency* in that the latter takes input prices into account and involves producing at least cost.

Technology transfer - The movement of innovative production processes across jurisdictions or organizations. The use of new technologies by multinational corporations in countries where they have invested or are doing business.

Telecommunications - Communicating by sending voice, data or images over networks that might involve telephone lines, satellites, and the radio spectrum. See *telecommunications network*.

Telecommunications network - All technological elements necessary to convey information signals by wire, radio, optical fiber or other electromagnetic means.

Temporary disconnection - When telephone service is discontinued but the *subscriber* is still considered a customer.

Tendering - Putting out a request for proposal to have an external party provide needed services or equipment. The purpose is to promote competition, thus reducing the input price. The process can also involve the sale of assets or licenses by the party issuing the announcement. Here, the objective is to maximize the sale price or to achieve some other objective—such as expansion of network services.

Terminal - The point at which information enters or leaves a communication network; also, a device that can send or receive data.

Terminating operator - The firm receiving and completing calls from another jurisdiction.

Termination and re-franchising - If the operator violates the conditions of the license for the franchise, the oversight agency can revoke the license and put it out on a competitive basis.

Theory of contestable markets - A theory that holds that potential competition can have an impact on price similar to when there are a large number of firms in the market. Even though one or a few suppliers are currently in the market, market power is constrained by the threat of entry—if entry barriers are, indeed, low.

Third-number calls - See *third-party billing*.

Third-party billing - Charging a call to a number other than the one being called or the one from which the call is made.

Third-party notification - A program that notifies a friend or relative of a *subscriber* whose telephone bill is overdue.

Time accounts - Financial deposits that earn interest but that require a period of notice prior to withdrawal.

Time deposits - A deposit of money with a bank or other financial institution that requires notice before it can be withdrawn.

Time lags - The time between implementation of a policy and its economic effect. Such delays affect the efficacy of different policy instruments. Some lags, such as *regulatory lag*, can have positive incentive effects in terms of cost containment.

Time-of-use (TOU) rates - Pricing a good or service according to its estimated cost during a particular time period. When schedules are announced in advance of billing, customers can adjust to the price signals. Electricity and *telecommunications* both have applied TOU rates to some customer categories, given the costs of metering and the cost of meeting *peak load demand*. *Real-time pricing*, in contrast, is based on actual (as opposed to forecast) costs, and these will fluctuate throughout a day (often due to weather sensitive demands) rather than only varying within a fixed schedule.

Time-of-use pricing - See *time-of-use (TOU) rates*.

Toll call - A type of long-distance (rather than local) call for which a set fee is charged.

Toll-free call - A long-distance call that is free to the caller, like an 800 number.

Tone dialing - A feature of touch-tone telephone that allows interactive services.

Total cost curve - A graph depicting the total cost of producing each level of output per time period.

Total costs - The cost for a given level of output, calculated by adding total *fixed costs* and total variable costs.

Total product - Total output.

Total revenue - Total income for a given level of output, calculated as per unit price multiplied by quantity sold (for products with a simple rate design. When *multi-part pricing* or product bundling is used, the income from sales can depend on the number of customers, monthly fees, and other factors.

Total revenue curve - A graph depicting *total revenue* earned from the sale of the product as a function of different levels of output.

Touch-tone service - The type of service that allows full use of touch-tone phones.

Touch-tone telephone - One that features a numerical keypad; each number transmits a distinct tone.

Tradable permit regulation - See *tradable permits*. In establishing a tradable permit regime, an environmental agency must determine the allowed level of emissions and whether additional constraints might be applied to local areas with particular circumstances. In addition, the sector regulator has to make decisions regarding the treatment of savings from the regime—whether they should be passed on to consumers or retained by firms—to provide an incentive for participating in the emissions trade markets.

Tradable permits - To minimize the cost of meeting an environmental target (such as only allowing only one million tons of sulfur dioxide emitted), allowances can be distributed to polluting firms, who are then allowed to exchange them for money. Firms with low compliance costs can sell their permits and cut back emissions. Alternatively, the agency responsible for allocating permits could sell them to the highest bidders, and then allow the permits to be further traded as firms discover new ways to reduce emissions.

Trade union - An organization of workers formed to advance its members' interests regarding wages, benefits, and working conditions

Trademark - A brand or part of a brand legally reserved for the exclusive use of the owner as maker or seller

Trade-off - Equivalent to *opportunity cost*; a trade-off involves giving up one thing in return for another

Training: The process of imparting knowledge and skills through a formal program that might involve lectures, exercises, and other learning activities.

Transaction costs - All costs associated with buying and selling a good or service. These costs include determining the quality of the good and monitoring its performance characteristics.

Transaction-oriented tariff - A fee for transmission of electricity on the basis of entry point (source) of service and exit point under a contract; also called point-to-point tariff.

Transactions demand - The need to have money on hand for everyday purchases. For a firm needs *working capital*.

Transactions motive - The incentives for consumers to hold sufficient funds for their likely purchases in the immediate future

Transfer earnings - The least amount required to keep a factor of production in its current employment.

Transfer payments - Payments for which no good or service is exchanged; e.g., pensions, lottery payments. See *transfers*.

Transfer pricing - A practice of internal charges between branches of the same company adopted by multi-jurisdictional firms (including multinationals) so that their accounting practices result in reported high incomes and profits in those geographical areas with low tax rates.

Transfers - In public finance, the allocation of money from one group to another, as when those receiving public pensions did not contribute significantly to the pension funds. The deficit may require other citizens (taxpayers) to make contributions to cover pension obligations.

Transfers of the franchise - The firm in possession of a license or *franchise* may be given the right to sell it to another party. Alternatively, such transfers may not be permitted.

Transformation curve - Another name for a *production possibility frontier* or curve.

Transformer - An electromagnetic device that allows changes to the voltage level of alternating-current (AC) electricity.

Transit network - An intermediary network. In telecommunications, the network through which a call passes that is neither the originating nor the terminating network for the call.

Transit of electricity - Transmission of active energy from an exporting to an importing system through one or more transmission systems.

Transit segment - The network segment from one digital main switching unit (DMSU) to another; the cost includes conveyance costs and the costs of the second DMSU.

Transit service - In telecommunications, a conveyance service between two points of *interconnection* and thus a linking of two networks that are not otherwise connected.

Transition charge - A fee that customers who purchase generation services from an *alternative electric supplier* pay to their local utility for distribution services. This allows the utility to recover its *stranded costs* and implementation costs with loss of a portion of its generation business (when services were formerly provided by a vertically integrated regulated utility). Sometimes called a *competitive transition charge*.

Transition costs - See *embedded costs exceeding market prices* and *stranded costs*.

Transition period - A number of years deemed adequate for allowing a formerly regulated firm the opportunity to recover *stranded costs* through the use of a *transition charge*.

Transmission - The transportation of electric energy in bulk from a source or sources of supply to other systems or parts of a single system.

Transmission access - The ability of third parties to use transmission facilities owned by others (wheeling utilities) to deliver power.

Transmission reliability margin - Part of total transportation capacity that is reserved to cover uncertainties. These contingencies may be due to failures in transmission links or unique weather situations.

Transmission-dependent utility - One that lacks its own generation source and that relies on other utilities for its power and transmission.

Transmitting utility (Transco) - An electric utility or organization that owns or operates electric power transmission facilities for the sale of wholesale electricity.

Transnational corporations - Businesses operating in several countries.

Transparency: Openness of the regulatory process: features of regulatory transparency include clarity of regulatory roles, responsibilities and objectives, predictability of decisions, accountability, stakeholder participation and open access to (non-strategic) information through documents placed in the public domain. Such openness increases the legitimacy of regulatory agencies and the public acceptance of decisions.

Transport - Ways of moving people and goods.

Transportation, gas - Transporting gas through pipelines.

Treasury bills - Short-term securities issued by the U.S. government to money markets; these usually mature within three months.

Trend - Long-term movement in a time series that indicates direction and rate of change when allowance has been made for other components.

Trickle down - An economic theory stating that gains accruing to those at the top of the *income distribution* flow down to include the entire society in time. See *supply-side economics*

TTY (text telephone) - A special telephone that lets people who are deaf, hard of hearing, or speech-impaired communicate by typing their messages.

Twisted pair - The two copper wires used in traditional telephone wiring.

Two-part tariff - See *multi-part tariff*.

Tying contract - An arrangement that makes the sale of a good by a producer conditional on the purchase of another good, viewed by some as facilitating the achievement of production and

marketing economies. Others view such contracts as foreclosing some markets and promoting the expansion of market power. See *bundling*.

Type I error - Rejection of a null hypothesis that is in fact true. For example, rejecting a new pharmaceutical that would (in fact) have had very beneficial effects in treating a medical condition.

Type II error - Failure to reject a null hypothesis that is in fact false. For example, not rejecting a new pharmaceutical that turns out to have damaging side-effects for certain types of consumers.

Ultimate customers (consumers) - Those who purchase a good like electricity for their own use rather than for resale.

Unbundled utility services - Disaggregating components of a previously vertically integrated network. For example, separating electricity service into its basic components (generation, transmission distribution, and retail) and offering each component for sale. With separate charges for each component, stages of production that are potentially competitive can attract entry—potentially leading to improved industry performance.

Unbundling - See *unbundled utility services*.

Underlying rate of inflation - Also known as RPIX, this is an adjusted measure of inflation that attempts to remove distortions in the retail price index (RPI).

Underproduction - Production below the socially optimum level.

Unforeseen circumstances - Unexpected events that can affect supply, demand, and policy outcomes.

Uniform tariffs - Charging the same price for each unit of output.

Unit cost - Average cost calculated by dividing *total cost* by output.

Universal service - A policy of making a product accessible to all citizens at affordable prices. This policy might use *targeted subsidies* to achieve the stated objective.

Unlimited liability - Personal responsibility for business debts incurred as a general *partnership* rather than under terms of incorporation.

Unregulated charges or services - Infrastructure firms may produce some products that are not subject to rules issued by regulatory commissions. It becomes a matter of policy of how to *ring fence* those products so that costs of producing those products are not allocated to the regulated portions of the business.

Unregulated service - See *unregulated charges or services*.

Urban development corporations - Organizations to improve poor urban areas.

Used and Useful: A test used by regulators to evaluate the justification for particular corporate investments, used for cost of service and price cap regulation. The test checks whether a plant or piece of equipment is actually being utilized to provide service, and that it is contributing to the provision of the service. For example, if a company has excessive numbers of distribution lines carrying electricity to a neighborhood, the regulatory authority may disallow some of the investment because even though the lines carry electricity (are “used”), they are not needed, so they are not “useful.” See Prudency.

Utility regulation - See *regulation*.

Valuation - The process of estimating the value of an activity or asset. Book values utilize historical costs. Alternatively, one can use market values to assess the value of an asset.

Value: The Worth or utility of a product or service. The market value (of, say, a firm’s stock) would be determined by the forces of supply and demand—where the price reflects expectations about the timing, level, and risk of future cash flows. One can also consider the value of a product or service consumed by citizens in terms of their willingness to pay for that product or service. The social value would incorporate additional benefits (or costs) that are not reflected in the market price.

Value-added - The value of final goods minus the cost of buying raw materials and intermediate goods.

Value-added tax (VAT) - A tax on the difference between the value of goods sold and the cost of raw materials (and intermediate goods). The tax serves as a replacement for sales tax in almost every industrialized country outside of North America.

Variable - A characteristic that has varying numerical values, e.g., income, quantity sold, or age.

Variable costs - Those costs that vary with the level of output, e.g., fuel costs. These costs increase as output increases, unlike *fixed* and *sunk costs*, which are unchanged when output changes.

Variable factor - A factor of production whose quantity can be varied in the short run; e.g., labor and raw materials.

Variable pricing - Offering the same goods at different prices in different markets. See *price differentiation*.

Vertical integration - Ownership of all aspects of production, sale, and delivery for a product or service (often as a result of mergers of firms involved in different stages of production). Electric utilities have been vertically integrated historically, with a single firm owning assets and being responsible for generation, transmission, and distribution systems, as well as for the metering and billing activities (retail).

Vertical merger - The joining of firms that operate at different stages of production.

Vertical Separation: Separating a firm that had been characterized by vertical integration into several parts. For example, public policy might separate electric generation, transmission, and distribution functions of a utility into separate, stand alone companies. On the practical side, if a restructuring initiative is adopted (to un-bundle what was traditionally a vertically integrated industry), policymakers generally try to address the issue of how to deal with the lost economic values of company assets that are affected by the policy change. For example some U.S. states have imposed competitive transition charges to have consumers bear some of the burden of moving to a new market structure and new regulatory framework (sometimes labeled stranded costs). Revenues from these charges are used to compensate companies for the diminished economic value of their assets due to the restructuring initiative.

Vickery auction – An auction in which competing buyers submit sealed bids. As usual, the highest bidder wins, but for a *Vickery auction*, he or she pays the amount bid by the next highest bidder. Named after a Nobel-winning economist who noted that bidders can safely bid their top value, since (if they win) they will receive a surplus that depends on the next highest bid. In bidding for a contract, the winner is the company with the lowest costs (since the bidders do not have to guess at what others are going to bid). Thus, competing bidders reveal their true best price.

Video dial tone - The ability to obtain pictures through a telephone line.

Voltage reduction - Any intentional reduction of system voltage by 3% or more to retain continuity of service of the bulk electric power supply system; sometimes referred to as a “brownout.”

Volume discount - A lower charge for large quantities of a product or service.

WACC: Weighted Average Cost of Capital. An average representing the expected (incremental) return on all of a company's securities. Each source of financial capital, such as stocks, bonds, and other preferred stock, is assigned a required rate of return. These (estimated) required rates of return are weighted in proportion to the share each source of capital contributes to the company's overall capital structure (reflecting current market values or the target capital structure). The resulting rate is what the firm would use as a minimum hurdle rate (required return) for evaluating a capital project or investment. In a regulatory setting, the allowed rate of return would be based on the WACC, sometimes modified to use book values for the capital structure weights and/or the coupon rates of issued bonds (instead of the current yield to maturity of the firm's long term bonds).

Wage rate - Amount of pay in a given time period, (e.g. per hour)

Wages - Payments for labor.

Wants and needs - Terms used to refer to the preferences of consumers. Sometimes wants are viewed as “socially” influenced while needs are characterized as more basic.

Warranty - A promise to repair or replace a faulty product, usually in the form of a written contract.

Wastewater - Includes domestic and institutional sewage, water used by commercial and industrial operations, and ground water infiltration.

Wastewater treatment plant (WWTP) - A facility to treat urban wastewater and runoff collected by the sewer system.

Water treatment plant (WTP) - A facility to make water potable or safe for drinking.

Wealth - All assets capable of earning income, whether human or material.

Wealth effects - The psychological changes experienced and their behavioral expression with a perceived increase in welfare or income.

Weatherization - Measures used to reduce energy consumption by preventing heat gains or losses; e.g., insulation and the like. Sometimes, utilities are given special incentives to promote such conservation activities, under the view that consumers may under-estimate the benefits from such activity.

Weekend rates - See *ngh/weekend rates*.

Welfare economics - That field of economics that addresses the optimal use of resources, where preferences and the *income distribution* might be taken as given. Sometimes highly stylized models are used to derive conditions for optimality. For policy analysis, approximations are made so conclusions are based on rough estimates of alternative scenarios.

Welfare loss - Failure to achieve maximum social utility because marginal social benefit differs from the marginal social cost. Such inefficiencies can stem from over-production or under-production, and may reflect market failures (such as *externalities* or public goods), or *market imperfections* (due to consumer misinformation, or the exercise of market power).

Welfare loss triangle - An area on a graph showing the extent of *allocative efficiency*.

Wheeling - Transmission of electricity by a company that does not own or directly use the power it is transmitting. Wholesale wheeling is the term used when there are bulk transactions in the wholesale market. This word is often used as a synonym for transmission. *Retail wheeling* allows power producers *direct access* to retail customers.

Wheeling service - A contracted service to allow a system to transmit power by using another system's facilities in exchange for a payment of a wheeling charge.

Wholesale energy competition - Giving an energy distributor the option to buy power from a variety of producers, while the producers compete to sell their power to a large number of distribution utilities.

Wholesale energy customers - Any organization able (or allowed by law) to purchase or sell electricity without undertaking transmission, generation or distribution functions.

Wholesale power market - Purchase of electricity from generators for the purpose of reselling it to others, who then sell to retail customers. Also, the *ancillary services* needed to maintain *reliability* and power quality at the transmission level. See *wholesale energy competition*.

Wholesale transmission services - Transmission of electric energy to be sold in wholesale markets.

Wind energy/wind generation - Using wind-powered turbines to generate electricity.

Wireless network - A *telecommunications network* that transmits messages to and from equipment that is not directly connected to any wiring. Alternatively, the term might refer to a network that has some fiber-optic interconnections, but whose customers have access to mobile wireless service.

Wires charge (energy) - Charges levied on power suppliers or their customers for the use of transmission or distribution wires.

Wiring, telephone - The connection between the customer's telephone and the phone company's lines that conveys calls.

World Trade Organization (WTO) - Created in 1995 to replace the General Agreement on Tariffs and Trades (GATT) dating from 1947. The WTO is concerned with the global rules for trade between nations.

X-axis - The horizontal axis on a graph.

X-factor - A productivity adjustment in a *price cap formula*, used to adjust price in line with a firm's expected productivity improvements. Determining the appropriate X-factor can be highly contentious, since it affects the time path of prices—which determines cash flows to the firm and benefits received by customers. See *price cap regulation*.

X-inefficiency - Also labeled “organizational slack”, reflecting the use of inappropriate incentives within an organization. Failure to produce on the lowest possible average and *marginal cost* curves (resources are not being used as efficiently as possible). Such inefficiencies are most likely when there is insufficient competitive pressure.

Yardstick regulation - When utility suppliers do not face direct competition, regulators can put pressure on those firms by basing their prices on the cost performance of comparable firms. This technique provides companies with strong incentives to cut costs, and dampens the effect of *information asymmetries* between companies and regulators. See *benchmarking*.

Y-axis - The vertical axis on a graph.

Yield - Income as a percentage of price; e.g., a security's yield would be its annual income as a percentage of the current price of the security.

Zero sum game - One that exactly balances gains by one player with losses by other players. The term could be used to characterize a situation where the regulatory rule does not create new cost savings or improve customer valuations of the product. Rather, the rule (or pricing decision) only redistributes the existing net benefits between the producer and consumers. One party is better off and the other is worse off by the same dollar amount.