

A Primer on Public Utility Regulation for New State Regulatory Commissioners

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Some new commissioners begin their jobs with great experience in utility regulation and familiarity with its language. To others it is a new realm. This primer provides a brief overview of the history and structure of state commission regulations with links to some fundamental sources and a glossary linked to the text.¹ Blue hyperlinks mark internal links between the text and the glossary; purple hyperlinks open external websites.

Public Utilities

Public utilities are business enterprises that provide essential services to the economy and are public in nature. The features that make an enterprise public include supplying continuous or repeated service through permanent physical connections between the plant of the supplier and the premises of the customer (e.g., electricity or water). Public enterprises also include transportation entities such as airlines, railroads, and gas or oil pipeline companies. The high degree of public interest in the provision and widespread use of these services forms the basis for government regulation. Economically, the basis for traditional regulation was the belief that these services are more efficiently provided by [monopoly](#) firms rather than through competitive markets. Whether monopolies, or increasingly, multiple firms in competition, most public utility service providers are private firms whose operations are governed by law and regulated by public authorities. Supreme Court Justice Louis Brandeis summarized the relationship as such: “the company is the substitute for the State in the performance of the public service, thus becoming a public servant.”²

¹ This primer was prepared with the considerable assistance of Alex Koles, Ted Lehman, and Michael Murphy.

² *Missouri ex rel. Southwestern Bell Tel. Co. v. Missouri Pub. Serv. Comm’n*, 262 U.S. 276, 291 (1923) (Brandeis and Holmes JJ., concurring).

The term “public utilities” is becoming less used, often being replaced by “companies” or “service providers.”

Regulatory Mission

Regulation is where often contending visions of the public interest among political authorities, private enterprises, and consumers intersect. State regulatory commissions must balance an increasing number of interests as they fulfill their missions. The missions of public utility regulation include: promoting workable competition in formerly regulated markets; preventing excessive monopoly profits and unreasonable price discrimination; supporting social goals such as [universal service](#) and [green power](#); and ensuring maximum public safety and management efficiency. These missions may at times conflict, and the role of the commissioner is to act to affirm public faith and confidence in both markets and the government. Because regulated utilities exist within and are important to the overall economy, regulation of public utilities cannot be divorced from the operating logic of competition in the rest of the economy. Instead, regulation is a substitute for competition and “should attempt to put the utility sector under the same restraints competition places on the industrial sector.”³ Because utility service companies are regulated in the public interest, regulation should provide incentives for utilities to adopt new methods, improved quality, increased efficiency, lower costs, new markets and expanded output to meet rising consumer demand.

State regulatory commissions are refocusing their missions and structures in response to changes in the foundations of the [quasi-judicial process](#) that has predominated over the last 100 years. The quasi-judicial practices of regulatory commissions grew from the failures and inconsistencies of regulation directly from the bench (i.e., judicial regulation), via legislation (i.e., rate-setting by law), and by grants of local franchises.⁴ State commission regulation replaced these varying forms, growing steadily in authority after 1887 when the [Interstate Commerce Commission](#) was created. The power to set rates (e.g., railroad rates) was established with the ICC, and many state commissions which had previously been forced to rely on publicity

³ Charles F. Phillips, *The Regulation of Public Utilities: Theory and Practice*, (Arlington, VA: Public Utilities Reports, Inc., 1993), p.173.

⁴ David Chessler, “The First and Current Competitive Eras In Telecommunications: Lessons From History and Limits of Antitrust Policy Today,” (Columbus, OH: NRRI 02-06, March 2002) <http://www.nrri.ohio-state.edu/phpss113/search.php?focus=02-06&select=Publications>.

to enforce their findings were newly empowered to determine binding rates and standards for utility providers. The enactment of the [Administrative Procedure Act \(APA\)](#)⁵ provided a uniform set of procedures for almost all federal agencies. It has also served as a model for many state administrative procedure statutes.

Contemporary Regulatory Environment

Today, regulatory commissions are less inclined to rely solely on traditional control mechanisms such as [rate cases](#), and instead they are evolving as institutions by “turning outward, becoming less adversarial, and reestablishing consensus among stakeholders about regulatory methods and institutions.”⁶ These stakeholders include: utility managers, shareholders and bondholders, large and small business consumers, residential consumers, as well as state and federal legislators and regulators. To some extent, regulatory commissions have been forced to redefine their traditional roles as the consent to be governed or ruled through commission rate cases, for example, has eroded. Increasingly, stakeholders are turning to legislatures and federal policy makers to achieve their preferred outcomes, and often subjecting the regulatory institutions themselves to denigrating assault. Commissions are now subject to more scrutiny regarding their authority. They are adapting to these challenges by transforming regulation through increased use of [alternative dispute resolution \(ADR\)](#) techniques, consumer education and outreach, dissemination of information, and increased involvement in the policy making process. This last technique requires commissions to define an effective and legal balance between their involvement in political processes and the maintenance of their ability to apply [due process](#) protection when appropriate. Commissioners and staff have had to expand the range of their skills and functions. Increasingly, commissions will “need to become policy leaders, advocates of conflict resolution, consumer advocates, legislative advisors, facilitators, and chief information officers.”⁷

The introduction of more market competition in utility provision and market-based regulation has paradoxically increased the demands on commissions. Commissioners must pay

⁵ 5 U.S.C. §§ 551 *et seq.*

⁶ David Wirick, “The Building Blocks of Regulatory Success in the New Era,” in NRRI Report, *The State of Regulation: An Annual Examination of the Four Utility Sectors*, (Columbus, OH: NRRI 01-10, August 2001), 2 <http://www.nrri.ohio-state.edu/phpss113/search.php?focus=01-10&select=Publications>.

⁷ *Id.* at 6.

more attention and be responsive to the legislative actors who have sanctioned much of the deregulation legislation, and at the same time, they must become more attentive to the needs of consumers who increasingly feel left to fend for themselves amidst many contending companies. A focus on consumers has always been a part of commission work, but it is increasingly important as service providers compete for customers across multiple service categories, often without establishing a physical presence near the customer (e.g., service resellers). These trends require flexible regulatory institutions and practices (e.g., regional regulation mechanisms), which allow commissions to continue to reassure the public that its interests are safeguarded. Because of changes in both the markets of service providers and the domain of commission regulatory authority, commissioner responsibilities have increased and the quasi-judicial function of retrospectively determining facts and assessing penalties has had to be supplemented with proactive management of all the parties' interests in public utility service provision.

Evolution away from traditional trial-type quasi-judicial regulation toward proactive practices is not without pitfalls for commissioners, and defining the appropriate balance between the need for creative, flexible, and rapid regulatory decision-making and the need to operate within statutory limits may be problematic. For example, "regulation by negotiation,"⁸ wherein service providers, consumer groups, legislators and regulators are brought together, considered equal and led by commissioners to fulfill the public interest, may involve commissioner communication with utility company officials that stretches ethical codes. To minimize appearances of impropriety on the part of commissioners, procedures and communication of commissioners are governed by certain ethical concepts. In all instances, the commissioner's responsibility is to not unfairly advantage or disadvantage a party through information dissemination.

Ex Parte Communications

Limitations on communications among parties outside of the hearings process (described as *ex parte communications*) vary by state and often affect the relationship between

⁸ Other regulatory models include: regulation by information, legislative or policymaking regulation, and consumer protection based regulation. See David Wirick, *New Models of Regulatory Commission Performance: The Diversity Imperative*, (Columbus, OH: NRRI 99-15, November 1999) <http://www.nrri.ohio-state.edu/phpss113/search.php?focus=99-15&select=Publications>.

commissioners and their staff. In general, off-the-record communications between and among parties is prohibited. Some states simply prohibit *ex parte* communications; others describe how *ex parte* communications can be remedied (usually by notice of the fact that an *ex parte* communication has occurred, the participants to the communications, and the content of the communication). In some states, commission staff are defined as “parties” to a case, and they perform an advocacy role; communications between commissioners and those staff are prohibited on matters that are being contested. In other states, staff are not parties to a case but may be defined as “participants.” In those states, more commissioner-staff interaction may occur during the progress of a case, and advocacy on behalf of consumers and others is provided by different entities. In other cases, advocacy staff are identified “by memorandum” for each case, allowing a flexible approach to the identification of advocacy and advisory staff. In some states, commissioners are assigned specific, permanent advisory staff, who of course may interact with commissioners at any time on any subject. The rules on *ex parte* communications as they effect commissioner-staff relations are a matter of some concern at many commissions and, in some cases, may adversely limit the availability of expert advice provided to commissioners on complex issues.

Open Meetings

Another ethical regulatory practice is the open meetings requirement, which again, differs by state. For example, in Colorado only one commissioner can be at a meeting where “public business is discussed” because of the legitimate desire to have commissioner interaction a matter of fully disclosed public records. Unfortunately, this makes collegial working relationships among commissioners more difficult. The [open meetings](#) (“sunshine”) requirement can make deliberations difficult as well, thereby increasing dependence upon staff. Open records laws vary from state to state, but generally apply to the case records and orders, and typically do not apply to commission work products, draft opinions, and [proprietary information](#). The importance of these practices inheres in the value of the information that commissions obtain in hearings and staff work.

Corporate Confidentiality and Consumer Affairs

Another issue of concern to utilities and commissions is the designation of information provided to the commission by the utilities as confidential. In most cases, the regulatory presumption is that any information requested by commissions and provided by others is public. Clearly, providers of service regard some information as proprietary, but typically the onus falls on the provider of information to justify its confidentiality. It is the responsibility of the commission to make judgments regarding the treatment of sensitive information. Inappropriate dissemination of information or use of commission procedures may allow competitive utility providers to increase their competitors' costs, cause delays in entry, or to engage in other anticompetitive behavior (e.g., by acting as a price follower, or copying innovations or new service offerings filed with the commission). The protection of proprietary information is essential to maintain a level competitive field in the utility industries and to protect the integrity of the regulatory process.

Consumer affairs matters figure prominently in corporate confidentiality and commission work as commission contacts with the public are carefully recorded. The commission's ultimate responsibility to consumers is balanced against the service provider's desire for confidentiality in its dealings with and complaints from customers. Nonetheless, commissions engage in consumer affairs investigations, enforcement actions, and education initiatives that publish important facts about corporate behavior and overall customer quality-of-service issues. These responsibilities require commissions to record all forms of customer contact with the commission's consumer affairs department, including *inter alia* email, phone, walk-ins, and letters. Records of customer contact also ensure that such information is available to commission staff in appropriate areas (e.g., multiple price complaints against an entity for enforcement action or public information alert).

Electricity Regulation

Overview of Regulated Electricity Markets

Electric power is a critical component of economic opportunity and growth, and hence political stability. The bankruptcy of the Enron corporation and the crisis in California's electric market in 2001 brought renewed focus on this relationship and the importance of regulatory policy. The electric industry is undergoing its most fundamental change in over six decades, and it is instructive to review how the industry and regulatory relations at the state and federal levels developed. Before the passage of the [Public Utilities Holding Company Act \(PUHCA\)](http://www4.law.cornell.edu/uscode/15/ch2.html) <http://www4.law.cornell.edu/uscode/15/ch2.html> in 1935, there were multiple electricity providers serving the same geographic area and financial holding companies controlling affiliated corporate structures. These holding companies were able to generate large revenues and profits without the corresponding costs associated with electricity provision, while gouging consumers through large fees charged to their affiliated operating companies. These fees borne by the operating affiliates of the holding companies were then subsumed in the cost structure of the operating company and spread out over its customer base, hiding the large profits generated for the holding companies. State regulation of electric operating companies began in 1907 and a [Federal Power Commission \(FPC\)](http://www4.law.cornell.edu/uscode/7/901.html) was established in 1920,⁹ but they were incapable of keeping pace with the financial structure of the holding companies, or as with the FPC, were not chartered to regulate electric operating companies. Because of the various abuses and power of the holding companies¹⁰ and the market's failure to provide electricity to rural areas, the PUHCA and the [Rural Electrification Act \(REA\)](http://www4.law.cornell.edu/uscode/7/901.html) <http://www4.law.cornell.edu/uscode/7/901.html> were passed in 1935, ushering in a relatively placid era of regulated electric utility provision.

PUHCA, REA and the [Tennessee Valley Authority](http://www.tva.gov/) <http://www.tva.gov/> projects under the Roosevelt administration all challenged the exclusive investor-owned utility model and put forward the model that electricity provision was best considered a natural monopoly, therefore properly regulated by political authorities regardless of ownership structure. As a result of these

⁹ The FPC was chartered to regulate construction and operation of hydroelectric power projects, not investor-owned electric utilities. See Phillips, [The Regulation of Public Utilities](#), pp.644-666.

¹⁰ By 1932, the eight largest holding companies had control over 73 percent of electricity generated by investor-owned utilities.

changes in the middle 1930s, the electric industry became organized largely around investor-owned utilities that served single, integrated, contiguous service territories.¹¹ As proponents of public regulation predicted, during the next four decades the electricity industry developed capacity ahead of demand and reliable supply. Reliability began to falter in the middle 1960s with the Northeast power failure of November 1965 and the June 1967 power interruptions in the PA-NJ-MD interconnection. In response to these reliability challenges, the industry formed nine regional reliability councils www.nerc.com covering North America. Interconnection agreements for better managing peak demand and power pools to create necessary supplies during peak demand periods and ensure adequate reserves were also formed. The electric industry faced other challenges with the energy supply shocks of 1973-4. The increasing costs to some electric utilities (e.g., those using petroleum-fired generators and/or subject to increased construction costs due to higher energy input prices) caused some like Con Ed in New York to forego dividends to shareholders in 1974 and to raise prices onto most customers.¹² In 1978, the Public Utility Regulatory Policies Act (PURPA) <http://www4.law.cornell.edu/uscode/16/2601.html> was passed as a means of reducing dependence on oil for energy. PURPA's "main intention was energy conservation by encouraging or removing obstacles to [cogeneration](#) and renewable energy production."¹³

New Suppliers and Market Power

Energy price shocks and PURPA combined to focus regulators' attention on rates paid by customers and to endeavor to bring more diverse sources of electric supply on line. Incentives for energy conservation, efficiency and alternative sources were built into the legislation and then implemented by the newly established [Federal Energy Regulatory Commission \(FERC\)](#) www.ferc.gov. In order to bring about greater use of renewable sources, competition and efficiency, the FERC authorized [qualifying facilities \(QF\)](#) to sell electricity to utilities and ordered that utilities had to purchase QF electricity and not discriminate against them in

¹¹ Public power or cooperative-owned utilities accounted for only 7.9 percent of the electricity industry in 1935, but 22.8 percent in 1990. Phillips, *The Regulation of Public Utilities*, p. 649.

¹² Consolidated Edison Company of New York was producing 75 percent of its electricity from burning foreign oil, whose price had trebled by early 1974. See Phillips, *The Regulation of Public Utilities*, pp.36-7, footnote 61.

¹³ Ken Rose, "Four Evolving Issues for Policymakers in an Era of Continual Change in the Electric Industry," in NRRI Report, *The State of Regulation: An Annual Examination of the Four Utility Sectors*, (Columbus, OH: NRRI 00-07, May 2000), 2 <http://www.nrri.ohio-state.edu/phps113/search.php?focus=00-07&select=Publications>.

maintaining and purchasing power. These requirements began the process of opening up electricity generation and transmission to competition. The FERC further prodded wholesale competition in electric generation with its 1988 requirement of open access as a precondition for merger approval. This access was legislatively mandated in 1992 with the passage of the Energy Policy Act <http://www.epa.gov/radiation/yucca/enpa92.htm> and finally implemented under FERC Order 888 in 1996 <http://www.ferc.fed.us/news/rules/pages/order888.htm>. Pursuant to this FERC order, states began passing electricity market restructuring and retail competition legislation in 1996 and have since begun its implementation.

http://www.eia.doe.gov/cneaf/electricity/chg_str/regmap.html

The successful integration of QF electric generation prompted new actors to enter the generation segment of the industry, including **independent power producers**, unregulated utility affiliates and exempt wholesale generators. The FERC oversees most of these new market entrants' operations, and sets the rates these new entrants receive for their power. These developments harken back to the early days of the industry; now, as then, multiple electricity providers may cover a single contiguous territory. Other segments in the industry are preparing for or being opened to greater competition (e.g., interstate transmission grid and retail competition) and the market for electricity is itself being rapidly differentiated as competitors seek to specialize (e.g., wholesale, retail, firm, non-firm, peak, off-peak and ancillary power). With increasing market segmentation and differentiation has come complexity and disputes over rate setting and cost recovery among all the actors (e.g., rate unbundling, **stranded costs**, transmission rates, distribution rates for resellers, etc.). The FERC maintains its primacy over most of these issues; however, state commissions have important decisions to make in restructuring electricity markets and in complying with FERC orders. For example, FERC Order 2000 <http://www.ferc.gov/Electric/RTO/2000a.pdf> calling for **regional transmission organizations (RTOs)** to supplant state-only oversight of retail markets has encountered resistance partly because, "FERC's investigations into supplier **market power** have so far been inadequate."¹⁴

The ongoing inquiry into California's troubled transition to more competitive electricity markets caused other states to delay retail competition (e.g. Nevada) and re-opened the

¹⁴ Ken Rose, Ken Costello and Mohammad Harunuzzaman, "Energy Industry Restructuring," *The State of Regulation: An Annual Examination of the Four Utility Sectors*, (Columbus, OH: NRRI 01-10, August 2001), 41 <http://www.nrri.ohio-state.edu/phpss113/search.php?focus=01-10&select=Publications>.

theoretical and practical issues of assessing market power. With changing markets, it is often difficult to determine who is capable of exercising power to raise prices significantly above those that would result under competition, let alone reach conclusions about actual market manipulation by companies. Nonetheless, the FERC has the responsibility to “fix wholesale markets” if they are broken, and delay in reacting to California’s situation did not assuage other states’ concerns. The FERC did act on June 18, 2001, ordering “market-based” price mitigation on [spot market](#) wholesale prices (i.e., a price ceiling when reserves fall below 7 percent) across the eleven-state Western power market, and this did ease the upward trend in prices and other resulting market failures (e.g., bankruptcy of PG& E). In the future, “detecting when market power actually occurs, the magnitude when it is exercised, and what steps should be taken to correct the problem once it is found, are where the disputes will arise.”¹⁵

The FERC addresses all of these issues in its Standard Market Design Notice of Proposed Rulemaking (SMD NOPR), issued in July 2002. www.ferc.gov/Electric/rto/Mrkt-Strct-comments/discussion_paper.htm Following the policy direction set by the Energy Policy Act and FERC Order Nos. 888 and 2000, the SMD NOPR lays out a plan to standardize the structure and operation of competitive wholesale markets nationwide. The SMD NOPR proposes a comprehensive rule that would bring about extensive changes in the electricity market. Due to the extent of these changes, many state regulatory commissions and utilities voiced concern over the proposed rule. A white paper issued by FERC in April 2003 outlines changes to the proposed rule based on the numerous concerns raised in comments to the NOPR. According to the white paper, the final rule will still focus on the formation of RTOs and on insuring that all RTOs and ISOs have good wholesale market rules in place.¹⁶

¹⁵ Ken Rose, “Four Evolving Issues for Policymakers in an Era of Continual Change in the Electric Industry,” *The State of Regulation: An Annual Examination of the Four Utility Sectors*, (Columbus, OH: NRRI 00-07, May 2000), 6.

¹⁶ As of April 2003, the fate of the final SMD rule is still uncertain. The white paper calls for further public comments. Thus, it is possible that there will be even more changes before a final rule is issued. Moreover, Congress could yet step in and change the electricity markets or FERC jurisdiction via statute.

Natural Gas Regulation

Overview of Regulated Gas Markets

The [natural gas](#) industry has undergone profound development. Unlike the electric industry, the natural gas industry has seen market and regulatory restructuring over a long period, and markedly so since the late 1970s. Partly because of this experience, even as natural gas prices rose dramatically during the winter of 2000-2001, more electric generation was moving to the use of natural gas fuel. Increased dependency on natural gas for electric generation is predicted to continue, particularly in light of its environmental benefits. The price of natural gas, however, has shown significant fluctuation since it was first subject to supply concerns in the 1970s, including perceived and then actual shortages in the interstate sales market. Since the Natural Gas Policy Act <http://www.ferc.fed.us/informational/acts/ngpa.htm> was enacted in 1978, the complete regulation of natural gas prices, from the source (i.e., [wellhead](#)) to the consumer (i.e., burner tip), has given way to mixed regulatory authority of state commissions and federal regulators as well as unregulated competition among wellhead producers, [marketers](#) and [brokers](#).

To manage the risk of fluctuating gas prices across the now independent business segments from source to customer (i.e., wellhead producers, [gathering companies](#), interstate [pipelines](#), marketers/brokers, [local distribution companies \(LDCs\)](#)), many businesses use [derivatives](#) and other hedging instruments. These tools are intended to reduce the risk of volatile prices negatively affecting operations, but their use by state regulated LDCs and FERC regulated interstate pipeline companies raises several concerns.¹⁷ For state commissions these include: determining how hedging fits with a utility's more traditional gas-management strategy, which centers on the purchase and storage of actual gas quantities; defining a reasonable and specific risk management strategy for LDCs; establishing regulatory incentives for utility hedging, particularly recovery provisions related to hedging-program costs or losses; specifying operating features of an LDC hedging program, including specific safeguards, limits and reporting

¹⁷ These issues are more thoroughly reviewed in a recent NRRI publication coauthored with the Kansas commission's Chief of Economic Policy and Planning. See Ken Costello and John Cita, [Use of Hedging by Local Gas Distribution Companies: Basic Considerations and Regulatory Issues](#), (Columbus, OH: NRRI 01-08, May 2001) <http://www.nrri.ohio-state.edu/phps113/search.php?focus=01-08&select=Publications>.

requirements; and finally, evaluating the effectiveness of different hedging tools by defining and accounting for performance possibly judged against a “prudent” standard.

Changes to Commission Oversight and Gas Market Structure

State commissions are at the regulatory forefront in assessing how much risk is prudent for LDCs to assume, and they are in this position because of the failure of [price cap regulation](#) in the 1970s. By the late 1970s, wellhead price ceilings were curtailing investment in more capacity and causing diversions away from interstate transshipment. These deficiencies resulted in the Natural Gas Policy Act, which aimed primarily at deregulating the price of natural gas production at the wellhead, so that the incentive to produce and transship more natural gas would take hold again. The industry took time to respond to this law as well as FERC rulings designed to bring this about (e.g., FERC Order 380 in 1984 reducing costs to LDCs for switching suppliers). Despite these efforts, by 1986 natural gas consumption in the United States was 22 percent less than it was in 1970.¹⁸ The FERC acted decisively at this time to change the gas market by opening up the interstate pipeline to greater competitive access (e.g., FERC Orders 436 and 500, in 1985 and 1987 respectively). As a result, in 1989, 75 percent of pipeline–transported natural gas was owned by third parties, not the pipeline or wellhead production company. FERC Orders 636 and 637 in 1992 and 2000 furthered this competition in natural gas production and interstate transportation by requiring mandatory [unbundling](#) of pipeline services and pricing at market rates, allowing [open access](#) to the interstate pipelines, and market-based trading of pipeline capacity itself, not just the gas traversing through it (e.g., FERC Order 637 removed price ceilings on short-term secondary market [capacity release trading](#) until September 2002).

Competition outside the [citygate](#) was established by these prior developments, but competition within retail markets for residential and business customers (i.e., local distribution) has only just begun. State customer choice programs in local distribution began in 1995 and are proving to be challenging for state commissions to implement. For example, Georgia allowed

¹⁸ Wellhead price cap removal did not occur at one instant, rather price cap removals were phased in and only fully implemented in 1993, pursuant to the 1989 Natural Gas Wellhead Decontrol Act (1989). Ken Costello, “Regulation of a Restructured Natural Gas Company,” in NRRI Report, *The State of Regulation: An Annual Examination of the Four Utility Sectors*, (Columbus, OH: NRRI 00-07, May 2000), 21 <http://www.nrri.ohio-state.edu/phss113/search.php?focus=00-07&select=Publications> Phillips, *The Regulation of Public Utilities*, 708.

retail competition beginning in 1997 (i.e., competitive gas marketers) and the effects highlight that slow implementation and more state commission oversight of competing marketers may be warranted.¹⁹ Increased competition at the retail level is likely to increase commission workloads and responsibilities, both in monitoring customer satisfaction and in policing against market power abuses. The potential pitfalls of competition are illustrated by El Paso Natural Gas' market manipulation in California. El Paso Natural Gas exercised market power by limiting the natural gas supply and therefore driving prices higher.²⁰ Interstate pipelines and gas marketing companies may be affiliated and use their market power to restrain price competition. Because of this possibility, state commissions will need to devote increasing resources to the analysis and monitoring of these companies and insuring effective entry of new competitors. Although the natural gas market is fluid and competitive today, with about 60 percent of all transactions occurring in the spot market, the benefits of retail competition must be delivered to customers within the commission-regulated territories of the LDCs in order for the regulatory landscape to change further in the direction of openness.

These changes and challenges suggest commission responsibilities shifting away from traditional rate-of-return regulation. Instead, commissions need to be adaptive to increasing segmentation in the natural gas industry, as some services retain characteristics of natural monopolies while others will be more susceptible to competition. Adaptive regulatory models should encompass several of the following characteristics:

1. A bifurcated pricing system, traditional rate setting for captive customers and market-based pricing for other services.
2. Regulatory monitoring and evaluation systems guarding against market-power abuses.
3. Regulatory oversight ensuring no deterioration in a utility's quality of service.
4. Codes of conduct preventing customer abuses from utility-affiliate interactions.
5. Consumer protection rules preventing activities harming consumer interests.
6. Service unbundling rules shaping the execution of customer choice programs (e.g., pipeline capacity assignment).

¹⁹ For example, one survey found 46 percent of the largest LDC incumbent, Atlanta Gas Light Co., customers "wish that natural gas deregulation had never occurred." See Ken Costello, "Georgia Gas Restructuring Problems," in NRRI Report, *The State of Regulation: An Annual Examination of the Four Utility Sectors*, (Columbus, OH: NRRI 01-10, August 2001), 44 <http://www.nrri.ohio-state.edu/phpss113/search.php?focus=01-10&select=Publications>.

²⁰ A summary of the case can be found on the website of the California Public Utilities Commission at <http://www.cpuc.ca.gov/static/announcements/announcements+archive/puc+prevails+in+el+pas+complaint.htm>.

Telecommunications Regulation

Overview of Regulated Telecommunications Markets

The [telecommunications](#) industry has experienced a great deal of technological and regulatory change, but not as much change in the actual competitive landscape as envisioned in the Telecommunications Act (1996) <http://www.fcc.gov/telecom.html>. Since the Act's passage, there are fewer [incumbent local exchange carriers \(ILECs\)](#) due to mergers (e.g., SBC and Ameritech), but there have been tremendous innovations and technological advances across a whole range of telecommunications services (e.g., local, short-haul long distance and long-haul long distance telephony, cable internet, DSL internet, wireless digital, etc). Competition in the telephony market has increased with competitive local exchange carriers (CLECs) serving increasing numbers of local telephone lines nationwide. However, the pricing of [unbundled network elements \(UNEs\)](#) remains contentious among competitors and the ILECs. Pricing of UNEs is particularly sticky as the historic regulated prices captured all of the subsidy functions for providing universal service. New market entrants are naturally not as interested in paying for current universal subscriber subsidies, let alone costs associated with past subsidies, and have sought a competitive advantage in paying for only their service segment's actual economic costs. The [Federal Communication Commission \(FCC\)](#) responded to these issues by clarifying its unbundling rules in late 1999, establishing pricing guidelines for UNEs across three different price zones, urban, suburban and rural. UNE prices have been [de-averaged](#) within each price zone so that new entrants' costs reflect the actual network costs of an individual service or connection in each price zone.

As with any regulatory action, this ruling may advantage some service providers over others, and this is more likely as price cap regulation based on reasonable rates of return for investments gives way to pricing based only on the cost of providing the interconnection or network element. Because of the competitive advantage that can be had in price distortions on UNEs or any individual interconnection charge, questions of market power should be uppermost in state and federal regulators' minds. "The Telecommunications Act of 1996 creates unique mechanisms whereby entry deterrence may be a profit maximizing strategy for ILECs. By imposing strict conditions and high costs on interconnection, unbundled network elements

UNEs, and resale, ILECs can deter entry by reducing or eliminating potential competitors' profit opportunities.²¹ Monitoring ILECs, pricing efforts with these concerns in mind will continue to increase in importance as ILECs enter the lucrative long distance markets. Current FCC rules stipulate demonstrated nondiscriminatory access to the ILEC's territory in order for ILEC state-by-state long distance applications under Section 271 of the Telecom Act to be approved.²²

Telecom Chronology

A brief historical outline of the telecommunications industry illustrates the evolution toward more competitive markets²³:

1876	Invention of the telephone
1876 – 1934	Exploitation of the invention Theodore Vail and patent control – used regulation to retain monopoly and used scientific research so Bell advantage would not be lost State regulation begins
1934	Communications Act of 1934 Federal Communications Commission created Regulated monopoly with assured rate of return on investment/costs in return for universal service
1934 – 1984	Expansion of telecommunications Universal service largely achieved Bell acquires top license patents (1956) Private microwave communications allowed AT&T strategy of delay
1984	AT&T divestiture; Cable Communications Policy Act

²¹ Edwin Rosenberg and Michael Clements, Evolving Market Structure, Conduct and Policy in Local Telecommunications, (Columbus, OH: NRRI, 00-05, February 2000).

²² Section 271 of the Telecom Act sets out a 14-point competitive checklist for long distance applications. See http://www.fcc.gov/Bureaus/Common_Carrier/News_Releases/1999/nrc9101b.html.

²³ See Gerald Faulhaber, Telecom in Turmoil: Technology and Public Policy (1987).

	Creation of the seven “baby” bells
	Local cable monopolies and expansion of cable infrastructure
	Cellular licenses
1984 – 1996	Pressure on the structure of regulation
	Diversity and convergence in the industry
	State efforts to reinvent regulation
1996	Telecommunications Act
	Opened markets to competition, sets standards of competitive entry for states to enforce (e.g., FCC 14-point checklist)
	Preserves and enhances universal service
1999	Supreme Court Decision validating FCC authority to set UNE price rules, <i>AT&T Corp. v. Iowa Utilities Board</i>

State commission regulation responsibilities have increased with movement toward greater competition in telecommunications, while their responsibility to promote “economic efficiency, economic development, equity and consumer protection” remains.²⁴ The Telecom Act charges state utility commissions with increased responsibilities to promote competition and to monitor and arbitrate the often conflict-laden interconnection arrangements between incumbent local exchange carriers and competitors. The Act has further increased corporate efforts to influence market outcomes, and commission approval of mergers and joint arrangements between firms will likely also increase workloads in the coming years. Lastly, consumer satisfaction will remain a cornerstone of commission attention, particularly as ILECs must not let service quality deteriorate if they want to qualify for long distance market entry. This responsibility and ILEC service area expansion are challenging state commissions to adopt new oversight techniques often in cooperation with neighboring states in order to secure quality service for customers (e.g., western states’ regional oversight of Qwest).

²⁴ Vivian Witkind Davis and Frank Darr, “State Commissions in the Global Telecommunications Revolution,” in NRRI Report, *The State of Regulation: An Annual Examination of the Four Utility Sectors*, (Columbus, OH: NRRI 00-07, May 2000), p.29.

Water

Overview of Regulated Water Supply

The water industry is perhaps the most vital of all public utility industries, and as yet, the least subjected to the tenets of market competition. The water industry covers services and issues such as groundwater, drinking water, wastewater and related environmental and sustainability concerns. The major federal legislation affecting state commission responsibility on water issues are the Safe Drinking Water Act <http://www.epa.gov/safewater/sdwa/sdwa.html>, the Clean Water Act <http://www.epa.gov/region5/water/cwa.htm>, and the Water Resources Planning Act <http://epw.senate.gov/wrpa.pdf>. The water industry is subject to greater federal authority than the other major industries regulated by state commissions, as the U.S. Environmental Protection Agency (EPA) and other federal agencies set most of the standards and make decisions on major infrastructure projects. Nevertheless, like the other public utility industries, the water market and regulatory framework are undergoing change. Infrastructure issues remain paramount in the industry. Estimates for the cost of necessary investments are high.

Funding these investments will likely be the main industry issue before regulators in the near future, although water quality standards for both drinking and wastewater will always be present. These investments are increasingly subject, however, to private water company calculation rather than federal or state commission dictates. Industry restructuring through acquisition, privatization, and merger is a major driver of change and may be accelerating in the near future. There is evidence to suggest neglect of the water infrastructure, as one industry expert dryly noted, “our water infrastructure is four times as large as our interstate highway system, but because it lies mostly underground, its degradation has been invisible to consumers and the government.”²⁵

²⁵ Jack Hoffbuhr, AWWA’s Executive Director, quoted in John Wilhelm, “A Forward Look at the U.S. Drinking Water Industry,” in NRRI Report, *The State of Regulation: An Annual Examination of the Four Utility Sectors*, (Columbus, OH: NRRI 00-07, May 2000), 55 <http://www.nrri.ohio-state.edu/phpss113/search.php?focus=00-07&select=Publications>.

Glossary

Access Charge: A charge made by an ILEC for use of its local exchange facilities for purposes such as the origination or termination of traffic carried to or from a distant exchange by an inter-exchange carrier. Some access charges are billed directly to local end users, a very large part of all access charges are paid by inter-exchange carriers.

Administrative Procedure Act (APA): 5 U.S.C. §§ 551 et seq. The primary statute governing the procedures of federal agencies. Most states have statutes based on the APA. The administrative process set out by the APA consists of: (1) Rulemaking—agencies often perform a legislative function via notice and comment (informal) rulemaking. The public is informed that an agency is considering a new rule when a Notice of Proposed Rulemaking (NPR) is released. Public comments are solicited on the NPR, and then a final rule may be promulgated. NPRs and final rules are published in the Federal Register. A list of current rules in force can be found in the Code of Federal Regulations (CFR). (2) Adjudication—An agency process similar to a civil trial. Cases are usually heard by administrative law judges (ALJ). Juries are not employed in administrative adjudication. (3) Alternative Dispute Resolution methods are also used by agencies (see *infra*).

Alternative Dispute Resolution (ADR): A means of settling a dispute without resorting to litigation. Usually refers to arbitration, mediation, and conciliation.

Avoided Costs: The costs a utility would incur but for the existence of an independent generator. In other words, the amount it would have otherwise cost the utility to produce the power itself.

Benchmarking: A first step in incentive-based regulation, allowing rewards or penalties to a utility's earnings based on comparing the utility to a pre-set standard or against an index of characteristics of other utilities (e.g., one utility's costs of production with an average cost of 20 other utilities, or price paid for natural gas versus a broad index of natural gas prices)

Broker: Power brokers are entities that transact in power without taking possession of it. Thus, they act as agents, arranging sales of power. Power brokers, unlike power marketers, are not required to register with FERC.

Bundled Sales: Combined sales and transportation gas services, from the wellhead to the delivery point, or from the citygate to the burner tip. Previously known as the "Merchant Function."

Capacity Release Market: Following FERC Order 636 (1992), the capacity release market emerged allowing third parties access to the interstate pipeline and storage markets, often at below "list prices." Information on supplies is updated on the capacity releasing electronic bulletin board, facilitating greater trading in these segments of the gas industry.

Citygate: A point or measuring station at which a gas distribution company receives gas from an interstate pipeline company or the transmission system.

Codes of Conduct: Utility commission rules promoting fair competition in the retail marketing of power.

Cogeneration: The use of “waste heat” by an electric generation facility, usually residual steam heat from electricity generation, in a nearby industrial operation. Energy and fuel usage efficiency are enhanced through cogeneration. These operations are increasing as industrial facilities are producing their own electricity and utilities are often required to purchase the excess electricity at their avoided cost.

De-averaged Pricing: A method of determining the rate structure of UNEs based on the geographic distance from the utility to the end user.

Delivery Point: The point where gas leaves FERC jurisdiction (i.e., interstate pipelines) and enters state jurisdiction (i.e., citygate and residential/business customers of local distribution utilities), usually controlled from there on by LDCs; transactions at this point include price reporting and aggregated volume deliveries, usually subject to operational balancing agreements between LDCs and interstate pipeline companies.

Department of Energy Organization Act 42 U.S.C. §7101 et seq. This statute created the Department of Energy.

Deregulation: The process of reducing or eliminating government regulation of utilities. Deregulation is generally associated with the idea that competition between private firms can keep markets in check and lower prices. Deregulation is the opposite

Do Not Disconnect (DND) Policies: Many households that currently do not have telephone service are ones that formerly had service but were disconnected for non-payment. As of December 1998, 18 states had implemented a “do not disconnect” policy where local exchange carriers are prohibited from disconnecting customers as long as the customer pays the local portion of their telephone bill.

Due Process: A phrase used in American law to refer to the fundamental principles of fairness and procedural justice deemed to be essential for a rule of law. The Fifth Amendment of the United States Constitution (made applicable to the states by the Fourteenth Amendment) provides: “No person shall...be deprived of life, liberty, or property without due process of law.”

Electricity Wheeling: Refers to the carriage of electricity from a supplier to a third party across the transmission lines of an intermediate utility for delivery. Most wheeling is wholesale in nature (i.e., the third party is another utility). Retail wheeling refers to an electric generating facility sending power directly to consumers, bypassing utilities except for payment for transport over the transmission lines. The FERC does have some authority to mandate wheeling, but it does not exercise often.

Elements: Components of the access charges that LECs charge to interexchange carriers (IXCs), e.g., switching charges, transportation charges, and directory assistance.

[Embedded Costs](#): The actual fixed charges on a utility's long-term debt plus the annual dividend requirements of preferred stock. Embedded costs therefore include a fair rate of return on the original cost of facilities less operating and maintenance expenses, depreciation and taxes.

[Ex Parte Communication](#): Any communication that takes place between parties to a case outside the presence of other interested parties related to a commission proceeding (e.g., hearing, rate case, adjudication).

[Federal Communications Commission \(FCC\)](#): The FCC is an independent regulatory agency created in 1934 to regulate interstate and international communications. Today, the FCC regulates radio, television, wire, cable, and satellite communications. Intrastate regulation is under the jurisdiction of state regulatory agencies.

[Federal Energy Regulatory Commission \(FERC\)](#): An independent agency of the Department of Energy that regulates the price, terms, and conditions of wholesale power sold in interstate commerce and all transmission services.

[Federal Power Act \(FPA\)](#): Enacted in 1920, the FPA establishes guidelines for federal regulation of interstate energy sales. Today, the FPA is the primary statute governing the FERC.

[Federal Power Commission \(FPC\)](#): The predecessor to FERC, the FPC was established pursuant to the Federal Water Power Act in 1920. It was originally created to regulate the construction and operation of hydroelectric power projects. The FPC was abolished with the creation of the Department of Energy (DOE) in 1977. At that time, its functions were divided between DOE and FERC.

[Financial Derivatives](#): Financial instruments (contracts or securities) that get their value from the price fluctuations of a related security, future, or other index. Derivatives are traded on a regulated exchange market (e.g., commodities markets) or over-the-counter.

[Gathering System](#): The system of pipes and compressors which collect wellhead gas for delivery to processing plants; transactions in this market cover short-haul transportation charges and measurement of incoming gas streams.

[Grid Company \(aka GridCo\)](#): A GridCo owns, operates and controls transmission facilities and assets, while also transacting in the spot market for electric power sales.

[Green Power](#): Power that is generated from renewable resources such as wind, solar, hydro, biomass, etc. at a rate below that of natural replenishment.

[Incumbent Local Exchange Carriers \(ILECs\)](#): The network platform through which various other service providers interconnect with customers.

[Independent Power Producer](#): An entity that owns electric power generation facilities and sells electricity to utilities for resale to retail customers.

[Independent System Operator \(ISO\)](#): An ISO is an administrative entity (i.e., either commission inspired or legislatively mandated) that is charged with the efficient operation and control of transmission facilities and assets owned by electric utility companies over a defined territory, usually statewide. ISOs are charged with oversight of the reserve capacity of utilities and helping utilities meet demand, particularly peak demand.

[Integrated Gas Company](#): A company that obtains a significant portion of its revenues from the operation of both a retail gas distribution system and a gas transmission system.

[Interconnection](#): Establishing a physical link between networks so that traffic originating on competing networks can be exchanged. The Telecom Act requires ILECs to provide interconnection and access to network elements “on rates, terms, and conditions that are just, reasonable, and nondiscriminatory,” which are based on actual network costs. Rural LECs are exempted from interconnection rules, unless and until legitimate requests for interconnection are made. State commissions rule on: exemptions for small local exchanges; the establishment or continuation of intrastate access and interconnection standards; determine the appropriate resale discount; and mediate/arbitrate interconnection issues.

[Interstate Commerce Commission \(ICC\)](#): The first American regulatory agency, established in 1887. The ICC had jurisdiction to regulate the activities and ratemaking of common carriers, including water carriers and oil pipelines. The ICC was a result of public outrage over the unconscionable conduct of railroads and the political influence of the Granger Movement. The functions of the ICC were gradually transferred to other agencies until the ICC was disbanded in 1995.

[Local Distribution Company \(LDC\)](#): An LDC is the utility that is responsible for delivering gas to the customer within the citygate (i.e., after the pipeline or transmission company delivers gas to the LDC). LDCs are companies who obtain the majority of their revenues from the operation of a retail gas distribution system, and who operate no transmission system other than incidental connections within their own systems or to the system of another company.

[Marketers](#): Power marketers are entities that sell wholesale power that it generated itself or that it purchased. Power marketers, unlike brokers, are required to register with FERC.

[Market Hub](#): There are over 40 market hubs for natural gas in the U.S. Like the airline hub and spoke system, they make possible the numerous interconnections and paths moving gas from wellheads to retail markets.

[Market Power](#): The ability to create profits by increasing prices above competitive levels.

[National Association of Regulatory Utility Commissioners \(NARUC\)](#): www.naruc.org NARUC is a non-profit organization founded in 1889. Its members include state regulatory agencies, as well as utilities regulators from the District of Columbia, Puerto Rico, and the Virgin Islands. The mission of NARUC is to serve the public interest by improving the quality and effectiveness of public utility regulation.

Natural Gas: A mixture of hydrocarbon compounds and small quantities of various non-hydrocarbons existing in the gaseous phase or in solution with crude oil in natural underground reservoirs.

Natural Monopoly: The notion that some goods can be provided for by one firm at a lower average cost than when several competing firms provide the good. Government regulatory agencies were a response to such monopolies. The economic conditions that justify legal codification and regulation of a natural monopoly are based on economies of scope and scale. A natural monopoly avoids the cost of duplicative infrastructures for service delivery (e.g., two power lines over same territory) and thus delivers service at a lower total cost than if two or more firms each provided the service (i.e., economies of scope). Natural monopolies also can achieve lower average costs over the long term, particularly when larger production capacity yields decreasing costs of producing the good (i.e., economies of scale). Because monopoly providers add capacity in large increments, the average cost of service decreases as the size of the additional facility's capacity increases.

North American Electric Reliability Council (NERC): www.nerc.org Established by the electric industry to promote the reliability and adequacy of bulk power supply.

Open Access Transportation: Transportation provided by an interstate pipeline company that is open to all shippers willing to pay either the tariff rate or the market rate for capacity service. The pipeline operator cannot discriminate among competing shippers, and is subject to Part 284 of the FERC's regulations enforcing this mandatory unbundling of pipeline services.

Performance-Based Regulation: In this movement away from basic cost plus regulation (see rate base-rate of return regulation) a framework is created with specific utility performance targets and benchmarks (e.g., reduction in complaints to certain number). Revenues are no longer determined by only using cost of service studies added to an allowable rate of return. Instead, revenues are more variable and based on a customized formula, which could include adjusting measures for inflation, customer growth, productivity gains, performance rewards and penalties, and other factors. After adjusting allowable revenue with factors such as these, rates are then designed to reflect these broader incentives, often yielding variability on revenues and profits.

Pipeline: A continuous pipe conduit complete with equipment such as: compressor stations; communications systems; and meters, for transporting natural and/or supplemental gas from one point to another. This usually means from a point in or beyond the producing field or processing plant to another pipeline or to points of use, and also refers to a company operating such facilities.

Power Pool Market: The power pool is a market, usually trans-state, on which spot prices are set, and pool operators determine which power plants should run in order to insure an efficient system (i.e., maintaining adequate reserve capacity across pool territory). For the wholesale electric market, independent generators can sell their capacity to the Power Pool organization, which would then sell this electricity to competing distribution utilities for final retail sales to customers. Along the way, utilities are paid for their unbundled distribution services by the various generating and transmission companies.

Price Caps: In this method of utility regulation, regulators set the maximum price a service provider can charge and do not regulate its earnings with an allowed rate of return added to its rate base. Instead, prices charged to customers are fixed under a formula, which includes indexing for inflation, exogenous factors and productivity gains which in theory lower prices over time. This approach gives the incentive for the service provider to earn profits by decreasing its cost structure and increasing operating efficiency.

Proprietary Information: Confidential information of a utility company or other commission proceeding participant. Until used in a final and published ruling or finding, this information must be kept confidential (i.e., not disclosed to other parties) because it could cause harm, allowing potential competitors to abuse the regulatory process to their advantage for example.

Public Switched Network: The worldwide voice telephone network accessible to everybody who has telephone is called the “public switched network.” The public switched network is made up of switches and primarily copper wire, plus signaling systems. The center of the public switched network is the local central office densely packed with “class 5” switches.

Public Utility Holding Company Act (PUHCA): 15 U.S.C. §79 et seq. Prohibits the acquisition of wholesale or retail electric business via a holding company unless such business forms a part of an integrated public utility system.

Qualifying Facilities (QF): Pursuant to PURPA, independent power suppliers that produce electricity with cogeneration or renewables, and that meet other criteria set by FERC may sell their electricity to local utilities at avoided cost rates.

Quasi-Judicial Process: The administrative process employed by commissions based on the modified trial-type proceeding used in rate-setting cases. The basic procedures of a trial are used in this process and can include: filing of a rate request; discovery; pre-hearing conferences, oral and/or written testimony and rebuttal; cross-examination; administrative law judge opinions; and a final commission decision or order. Appeals to state and federal courts are possible after a final commission action.

Rate Base/ Rate of Return Regulation: This is the traditional method of regulating public utility service providers and establishing rates (i.e., prices of service) to consumers. Utility service providers’ net asset value, or rate base (i.e., gross value of all property minus the accrued depreciation of the property) and operating costs are calculated and reviewed by the commission; prices to consumers are set to cover these costs in addition to a reasonable rate of return on the present net value of the assets of the utility company (i.e., its rate base). This regulation is also referred to as cost-plus regulation, as the utility costs plus a return on its assets are provided for in the regulated prices.

Rate Case: A proceeding before a regulatory commission involving the amount to be charged for a public utility service.

[Reciprocal Compensation](#): Compensation for one carrier terminating traffic on another carrier's network, usually contentious between ILECs and CLECs, particularly those CLECs that offer internet service that yielded them revenues from ILECs. The FCC revised the payments from ILECs to CLECs but did not eliminate them, so the issue will remain.

[Regional Transmission Organization \(RTO\)](#): Pursuant to FERC Order No. 2000, state ISOs and some commission functions are to become reorganized under regional authorities, allowing greater region-wide competition in generation and transmission with system oversight at a supra-state level. RTOs, like ISOs, are designed to prevent vertical market control by firms seeking to favor their own electric generation in transmission to retail customers.

[Revolving Door Laws](#): Laws that restrict post-commission employment in industries related to commission work. These usually have minimum time periods a recently retired commissioner must wait to work for any related industry.

[Rural Electrification Act \(REA\)](#): [7 U.S.C. §901 et seq.](#) A statute that set up the Rural Electrification Administration to finance the construction and operation of utility services to rural areas.

[Spot Market](#): Where electric generation companies sell their immediately deliverable electricity (e.g., the California Power Exchange).

[Stranded Costs](#): Capital costs incurred by utilities that are no longer recoverable (e.g., old generating plants with environmental liabilities). When electricity was provided by one regulated monopoly, these costs were recouped across the whole customer base. With competition, many market entrants and customers will seek to avoid paying these costs, and incumbent utilities may suffer during the transition to just prices for these costs across the new and old entrants.

[Sunshine Laws/Open Meeting](#): Pursuant to freedom of information statutes, most states have passed laws requiring regulatory commissions to conduct all meetings among interested parties to a case in open and public venues. Similarly, the official record of decisions and filings must be made available to the public (e.g., open docket of filings in rate cases)

[Telecommunications \(Telecom\)](#): Any process that enables users to transmit information to other users (e.g., by radio, wire, electrical, electromagnetic, or optical means).

[Tennessee Valley Authority \(TVA\)](#): A federal agency established in 1935 to develop the Tennessee River valley region.

[Unbundled Network Elements \(UNE\)](#): The parts of the network that the ILECs are required by the Telecommunications Act of 1996 to offer on an unbundled basis. This allows telecom providers to deliver service without having to construct their own network infrastructure.

[United States Environmental Protection Agency \(EPA\)](#): www.epa.gov The EPA was established in the executive branch as an independent agency pursuant to Reorganization Plan #3 of 1970.

The EPA's mission is to protect human health and to safeguard the natural environment.

Universal Service: A commitment in the 1934 Communications Act to promote communications services to all Americans, especially those in rural areas. It has been a cornerstone of state and federal telecommunications regulation since then and is supported by three rationales underprovided by pure market competition: existence of network externalities; need for all citizens to have access to emergency services; and universal service promotes economic growth and development. Communications companies are required to contribute to a Universal Service Fund, which compensates companies for providing access to telecom services at reasonable rates throughout the country.

Wellhead: The point where gas is produced; transactions include sales between interested owners of the wellhead site, sales by interested owners, delivery to the gathering system and collection of royalties and taxes.

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