



Setting Rates: Best Practices for Electric Cooperatives

PART 3

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A Brief History of Electric Cooperative Rate Setting

Editor’s Note: *The first two parts of this series were included in the April 27, 2007, and July 27, 2007, issues of Solutions News Bulletin. Additional articles in the series will appear throughout 2008.*

Overview of Part Three

This special Solutions insert is the third in a series, “Setting Rates: Best Practices for Electric Cooperatives.” The series examines how electric cooperatives can apply best practices when setting rates for their members.

This part deals with the historical development of rate setting for electric cooperatives and includes these topics:

- Early state regulation of electric utilities
- Industry evolution and the emergence of federal power
- REA retail rate regulation
- U.S. energy policy since the energy crises of the 1970s
- State regulation of electric cooperatives
- Glossary
- Additional resources

Early State Regulation of Electric Utilities

The world’s first central electricity generating plant, Edison Electric Light Co.’s Pearl Street Station, went into operation in 1882 in New York City. Within a few years, several U.S. cities had multiple, competing investor-owned utilities (IOUs). Chicago alone had 29 electric companies by 1890. Initially, the Pearl Street Station served 59 customers for about \$0.24/kwh. By 1900, technology improvements and competition had pushed average national residential rates down to about \$0.17/kwh.

During this period, the public generally favored municipal electric systems over unregulated IOUs. Consequently, the number of municipal electricity suppliers spread rapidly. To protect themselves from municipal system domination of the industry—and from price competition with each other—some IOUs proposed that they be regulated by government agencies. Through their trade association (the National Electric Light Association), IOUs began to actively seek government regulation—but by states rather than by municipalities. Wisconsin and New York began regulating IOUs in 1907. By 1920, two-thirds of states were exercising that oversight.

Industry Evolution and the Emergence of Federal Power

The federal government became a regulator of IOUs, as well as cooperatively owned electric utilities, in the 1930s. It also became a major producer of electricity in this period. The 1933 to 1950 period was also characterized by continued growth of the electric industry, increased consolidation and interconnection and increasing economies of scale.

Recognizing the growing economies of scale in production, transmission and distribution of electric power, the federal government first moved to regulate IOUs. To counter utility abuses beyond state control, the Public Utility Holding Company Act of 1935 (PUHCA) provided for the regulation of utility holding companies by the Securities and Exchange Commission (SEC). The Federal Power Act of 1935 (Title II of PUHCA) established Federal Power Commission (FPC) regulation of utilities involved in the interstate wholesale transmission and sale of electric power.

The federal government also encouraged the growth of rural electricity service by aiding the formation of rural electric cooperatives. The Rural Electrification Act of 1936 established the Rural Electrification Administration (REA)—predecessor of the Rural Utilities Service (RUS)—to provide loans and assistance to organizations providing electricity to rural areas and towns with populations under 2,500. REA-backed cooperatives enjoyed federal power preferences plus lower property assessments, exemptions from federal and state income taxes, and exemption from many state and FPC regulations. As a result, by 1941 the proportion of farm homes electrified increased to 35 percent, more than three times the level in 1932.

The federal government also expanded its presence in the power production market in the 1930s, providing low-priced electricity to municipals and cooperatives. This was the period when large Bureau of Reclamation dams began serving the western states. Hoover Dam, on the Colorado River at the Arizona/Nevada border, started generating power in 1936; Grand Coulee Dam, on the Columbia river in central Washington and the nation's largest hydroelectric project, began operation in 1941. U.S. Army Corps of Engineers flood control dams provided additional low-priced power for preference customers. Under the Tennessee Valley Authority Act of 1933, the federal government supplied electricity to states, counties, municipalities and non-profit cooperatives. The Bonneville Project Act of 1937 pioneered the federal power marketing administrations. By 1940, federal power pricing policy was set; all federal power was marketed at the lowest possible price while still covering costs. From 1933 to 1941, federal and other public power installations provided half of all new capacity. By the end of 1941, public power contributed 12 percent of total utility generation, with federal power contributing nearly 7 percent.

During the pre-World War II years, electricity-generating systems continued to grow in size and efficiency. Maximum turbine sizes and pressures doubled and steam temperatures increased; generator cooling by pressurized hydrogen was introduced, resulting in higher generator outputs. By 1941, average heat rates dropped to 18,600 Btu/kwh. Improvements in transformers, circuit breakers and protection devices,

coupled with higher voltage transmission and distribution systems, also increased the efficiency and reliability of electric utility systems.

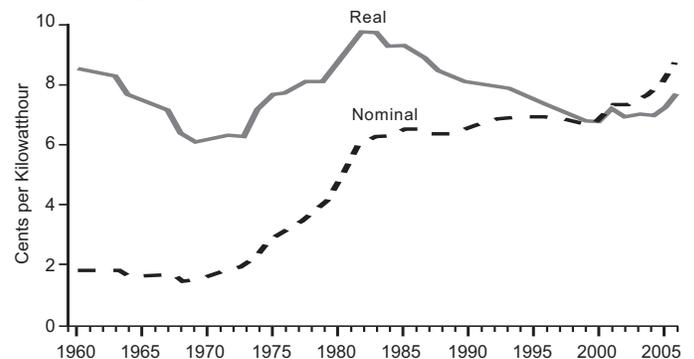
During this period, electricity prices continued to decline. Nominal residential electricity prices fell to \$0.0373/kwh in 1941, a drop of about one-third from 1932. Demand for electric power grew steadily from 1932 to 1941, with generation growth averaging more than 8 percent per year, although installed capacity increased less than 2.5 percent per year. Increases in efficiencies and decreases in costs continued throughout the 1950s and 1960s.

However, beginning in the early 1970s, both the nominal and real price of electricity started to rise abruptly. These increases were due to various events, including:

- fuel cost escalation from the first and second Arab oil embargoes,
- spiraling inflation, and
- the increase in costly new generation added during a cycle of capacity expansion that began in the 1970s and continued to the early 1980s.

Since the early 1980s, the real (inflation-adjusted) price of electricity has fallen significantly (see Chart 1, below).

CHART 1: Average Retail Prices of Electricity 1960-2006



Source: U.S. Energy Information Administration

REA Retail Rate Regulation

The evolution of cooperative rate setting has been both parallel with that of the IOU sector, and different in many respects. The advent of federal regulation of IOUs in the 1920s and their reluctance to serve rural areas provided opportunities for the development of electric cooperatives. Early cooperatives were highly leveraged with debt from REA. Because of this, REA regulated borrowers' rates based on "Times Interest Earned Ratio" (TIER) requirements.

In 1960, the REA prescribed—directly and by reference to related bulletins—rate-setting methodologies and features similar to those used by many electric cooperatives today.¹ For example:

- **Consumer deposits:** REA said the cooperative board should decide which classes of member-consumers are required to make deposits in order to receive service. Classes may include temporary residents and businesses, and reconnected member-consumers with histories of payment delinquencies.

- **Line extension policies:** Cooperatives should construct line extensions to the maximum practicable extent without adding to their adopted rates or minimum charges. REA recommended alternative line extension charges to cover significant incremental costs of extending service to a new member-consumer: an increase in the minimum monthly charge, a refundable service deposit or contributions in aid of construction.²
- **Classifications of member-consumers:** The main consumer classes suggested by REA are: “Rural Residential,” “Farm Consumer,” “Seasonal Residential Consumer,” “Commercial Consumer,” “Large Power Consumer,” “Street Lighting Service,” “Public Buildings” and “Irrigation.”
- **Rate setting:** Rates should be determined by the cooperative’s long-term revenue requirements for operating expenses including depreciation and taxes, interest on debt and margins sufficient to maintain a TIER of at least 1.5. Member-consumer class rates should be designed based on the cost of service to each class as well as simplicity and clarity.³
- **Minimum monthly charges:** To cover metering, billing and other non-variable costs, REA suggests member-consumers be charged monthly and allowed minimum consumption amounts. Sample tariffs in *Bulletin 112-2* recommend \$3 per month for residential member-consumers, entitling them to 40 kwh; for large power service, the higher of \$0.75/kVA of required transformer capacity or \$50 per month.
- **Declining block rates:** The sample rural residential member-consumer tariff in *Bulletin 112-1* contemplates four blocks: 40 kwh at \$0.075, which equals the minimum monthly charge of \$3; the next 40 kwh at \$0.04/kwh; the next 120 kwh at \$0.02/kwh; and \$0.015/kwh for monthly consumption over 200 kwh.
- **Fuel cost adjustments:** Commercial, industrial and irrigation accounts should be charged a fuel cost adjustment equal to the kilowatt-hour adjustment charged to the cooperative by its power supplier.
- **Demand charges:** For commercial and industrial accounts, the billing demand should be the maximum kilowatt demand for 15 consecutive minutes during the billing month, adjusted for power factor; the monthly demand charge should be \$1.50/kw of demand in excess of 10 kw.
- **Rate of return on rate base:** REA *Bulletin 112-2* recommends that cooperatives check the adequacy of operating income (revenues minus operating expenses) generated by their rates by computing their rate of return on rate base (operating income divided by the sum of utility plant net of depreciation, plus a working capital allowance less contributions in aid of construction). That ratio should approximate the cooperative’s weighted average cost of capital, assuming capital is comprised of 40 percent equity and 60 percent debt.

REA also suggested three tests that retail rates should meet: simplicity and understandability, equity of allocation of costs of service and operating margins, and uniformity of rates for each member-consumer class throughout the cooperative’s service area.

2. REA *Bulletin 112-3, Area Coverage Service* (1958).

3. REA *Bulletin 112-2, Electric Retail Rates* (1957, revised 1971).

Until the late 1990s, proposed rate changes by REA/RUS borrowers had to be officially approved by the agency. Rate approval requirements were dropped when it became clear that cooperatives needed to be able to react quickly to competition.

U.S. Energy Policy Since The Energy Crises of the 1970s

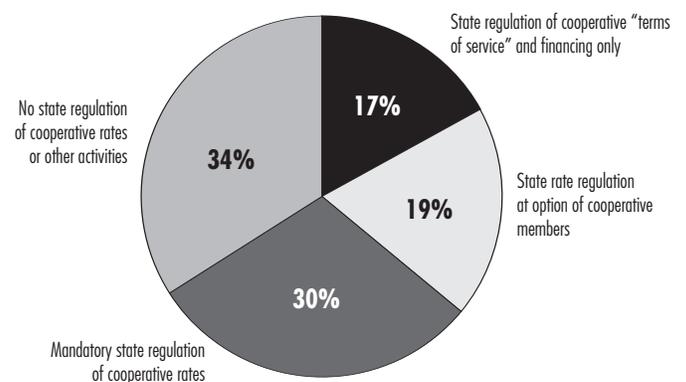
Since the energy crises of the 1970s, three main pieces of federal legislation have been enacted that have had an impact on electric cooperative rate setting:

- **The Public Utility Regulatory Policies Act of 1978 (PURPA)** required cooperatives and other utilities to purchase electricity produced by a new class of non-utility generator made up of small power producers and cogenerators. It also expanded the regulatory role of the federal government in state rate policies. This law’s equitable consumer rate standard caused some cooperatives to conduct their first cost-of-service studies to demonstrate the fairness of their revenue requirement allocations.
- **The Energy Policy Act of 1992** created a category of power producers called exempt wholesale generators, which could sell power into competitive wholesale markets. It also increased the authority of the Federal Energy Regulatory Commission (FERC) to order transmission-owning utilities to provide transmission access to other wholesale market participants. Consequently, the automatic power cost adjustments included in many cooperatives’ retail rate structures became more volatile.
- **The Energy Policy Act of 2005** repealed PUHCA, reformed PURPA and promoted transmission investment and reliability. FERC’s authority to prevent market manipulation was also strengthened. Rate-regulated cooperatives and those selling more than 500 million kwh per year are required to hold formal hearings to consider adopting time-sensitive retail rates and net metering.

State Regulation of Electric Cooperatives

Chart 2, below, shows the extent and nature of regulation in the 47 states where electric cooperatives operate. Thirty-four percent of states do not regulate cooperatives, while 17 percent regulate only with respect to terms of service and/or financing. However, 30 percent of states mandate regulation of cooperative rates. Another 19 percent give memberships control of whether or not their cooperative is state rate-regulated.

CHART 2: State Regulation of Electric Cooperatives



Source: NRUCFC compiled information

Beginning in the late 1990s, 16 states began implementing retail competition. Most of these jurisdictions exempted electric cooperatives from “customer choice” regulations. However, some utilities have been required to develop unbundled rates to allow separate billing for metering, billing and other individual distribution functions.

Recently, several states that initially embraced deregulation—including California, Illinois, Montana, Ohio and Pennsylvania—have begun considering re-regulation of electric utilities after competition failed to develop. In Virginia, lawmakers voted last year to scrap plans to move to a deregulated market.

Glossary

Cost-based rates: A ratemaking concept used for the design and development of rate schedules to ensure that the filed rate schedules recover only the cost of providing the service, including sufficient operating margins to meet debt service coverage requirements of investors and lenders.

Energy: The capacity for doing work as measured by the capability of doing work (potential energy) or the conversion of this capability to motion (kinetic energy). Energy has several forms, some of which are easily convertible and can be changed to another form useful for work. Most of the world’s convertible energy comes from fossil fuels that are burned to produce heat that is then used as a transfer medium to mechanical or other means in order to accomplish tasks. Electrical energy is usually measured in kilowatt-hours (kwh), while heat energy is usually measured in British thermal units (Btu).

Federal Power Commission (FPC): The FPC was created under the Federal Water Power Act on June 10, 1920. It was charged originally with regulating the electric power and natural gas industries. It was abolished on September 30, 1977, when the Department of Energy (DOE) was created. Its functions were divided between DOE and the Federal Energy Regulatory Commission (FERC).

Flat and meter rate schedule: An electric rate schedule consisting of two components: a service charge and a price for the energy consumed.

Full requirements consumer: A wholesale consumer without any generating resources of its own, whose electricity supplier is the sole source of long-term, firm power for the consumer’s service area. The terms and conditions of sale are equivalent to the seller’s obligations to its own retail service, if any.

Interruptible or curtailable rate: A special electricity arrangement under which, in return for lower rates, the customer must either reduce energy demand on short notice or allow the electric utility to temporarily cut off the energy supply so the utility can maintain service for higher priority users. This interruption or reduction in supply typically occurs during periods of high electricity demand.

Market power: The ability of any market trader with a large market share to significantly control or affect prices by withholding production from the market, limiting service availability or reducing purchases.

Partial requirements consumer: A wholesale consumer with generating resources insufficient to self-supply all of its load and whose supplemental energy provider is either a long-term, firm power source or energy received from others. The terms and conditions of sale are similar to those for a full requirements consumer.

Qualifying facility (QF): A cogeneration or small power production facility that meets certain ownership, operating and efficiency criteria established by FERC pursuant to the Public Utility Regulatory Policies Act.

Seasonal rates: Different seasons of the year are structured into an electric rate schedule whereby an electric utility provides service to consumers at different rates. The rate schedule usually takes into account demand based on weather and other factors.

Tariff: A compilation of all effective rate schedules of a particular company or utility. Tariffs include general terms and conditions along with a copy of each form of service agreement.

Times Interest Earned Ratio (TIER): A key financial ratio used to measure a cooperative’s financial health and its ability to meet interest expense on long-term debt. It compares the cooperative’s margins with interest expense. TIER is used by the financial community, by cooperatives in their internal financial planning and by regulators in setting cooperative rates.

Unbundling: Disaggregating electric utility service into its basic components and offering each component separately for sale with separate rates for each component. For example, generation, transmission and distribution could be unbundled and offered as discrete services.

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