

Choices in rate-setting philosophy

The board of directors of each electric co-op sets the rates that members pay for electricity. Since the day each co-op was able to energize lines 60-75 years ago, directors have been responsible for rates. This article will discuss what goes into rate decisions.

Those co-ops that are regulated must have their rates approved by the regulating body which demands that rate-setting follow a predictable formula.

Those co-ops that are not regulated also set rates based on a predictable formula so their rate-setting methodology can be explained.

Setting electricity rates is not guesswork.

Table 1: Comparison of Rate Design Options

kWh Usage	Typical Rate Design	Cost Based Rate Design
Customer Charge	8.00	25.00
kWh Charge	0.075000	0.060837
0	8.00	25.00
50	11.75	28.04
100	15.50	31.08
200	23.00	37.17
400	38.00	49.33
600	53.00	61.50
800	68.00	73.67
1,000	83.00	85.84
1,200 Average Usage	98.00	98.00
1,500	120.50	116.26
1,800	143.00	134.51
2,500	195.50	177.09
3,000	233.00	207.51
5,000	383.00	329.19

All three tables courtesy C.H. Guernsey via NRECA's Management Quarterly, Vol. 46, No. 1

Directors must be conscious of customer impact when considering rate design alternatives. In this example, both rate designs produce the same total revenue from the Residential rate class. In the Cost Based Rate Design, however, all customer-related costs are included in the Customer Charge instead of being partially recovered through the kWh Charge. Average users are not affected; however, low-use customers experience a noticeable rate increase while high-use customers receive a noticeable rate decrease.

Margin is first calculation

First, board members decide how much margin is necessary. Margin is the positive difference between revenue and expenses. In for-profit companies, the "margin" is called "profit." Margins make up part of the cashflow cushion it takes to successfully run a business. A for-profit company would reinvest part of the profits in order to provide this cushion and pay the rest of the profits out to shareholders. A not-for-profit co-op reinvests part of the margin and returns part of it to its members.

For a co-op, margin is interest-free money

"borrowed" from its members. It's borrowed in the sense that it's not returned to members as soon as it's earned. The co-op uses the money for several years before returning it.

Without margins, the co-op is not eligible to borrow money. If margins are considered adequate, a co-op is eligible to borrow money at a lower interest rate than if its margins are inadequate.

Without margins, the co-op can be short of cash when disaster strikes. Without margins, the co-op may not be able to pay out capital credits. (Capital credits are each member's portion of margins earned in a prior year.) Without margins, the co-op may be unable to pay off loans and unable to build the equity necessary to keep operating.

Second, calculate revenue needed per class

Rate classes among co-ops are not all named the same. In general, however, each co-op sets a rate for residential consumers, a different rate for seasonal consumers (like snowbirds), and so on for irrigation accounts, small-commercial consumers, and large-commercial and/or industrial consumers.

The revenues from a certain rate class have to allow the co-op to pay the expenses associated with that rate class as well as the margins needed from that rate class. In other words, if the industrial load in one area is so great that another substation is required, the revenue has to be enough to pay for the substation. Payoff cannot take longer than the number of years industrial customers are likely to need the substation.

The ideal rate situation is one in which each rate class pays its own way. The

ideal rate situation is one in which no rate class subsidizes another. In the short-term, this ideal is rarely achieved. The reason for subsidies is often, but not always, risk. Some rate classes are inherently more risky to serve than others. Residential consumers, for example, do not come with a lot of risk. Their demands are fairly low and consistent. Residential areas are generally stable. Commercial and industrial accounts can present more risk to the co-op than residential consumers. Some are profitable thanks to government policies, which can suddenly reverse or expire. Their demand for electricity can be much higher than a residential account. They can require more infrastructure. They can put more co-op resources at risk if, for example, they go out of business, move, or downsize.

Third, calculate revenue per customer

The costs to serve a co-op member are broken into three categories.

Demand-related costs are the costs which are directly associated with large amounts of electricity or greatly fluctuating amounts of electricity. Large commercial and/or industrial consumers may need transmission lines, bigger transformers, perhaps even a substation to sustain their appetite for electricity.

Energy-related costs vary according to the actual kilowatt-hours used. These costs are a portion of the electricity generated. Generation costs are billed to the distribution co-op from the generation and transmission co-op (G&T). Energy-related costs, therefore, are usually just a percentage of the wholesale power costs billed by the G&T.

Customer-related costs include everything which is necessary to serve electricity to a consumer, regardless of the previous two categories. For example, every consumer has to have a meter. Every consumer has to be billed. These are two of the many components that make up customer-related costs. These costs usually work out to \$20 to \$30 per consumer per month.

Once upon a time, the customer charge at most co-ops was artificially low. This benefitted those consumers who didn't use very much electricity, or only occupied their homes for a few months out of the year. Those who used a lot of electric-

Table 2: Cost Allocation Summary

STANDARD ELECTRIC COOPERATIVE, INC.

Existing Rates

Test Year Ending December 31, 2003

Cost Allocation Summary

Account	Total	Residential	Commercial	Large Power
Rate Base	159,647,771	148,637,422	8,135,177	2,875,173
Operating Revenues	86,375,000	76,341,226	4,612,663	5,421,109
Operating Expenses	82,632,068	73,890,140	3,844,903	4,897,024
Return	3,742,932	2,451,086	767,760	524,084
Rate of Return	2.344%	1.649%	9.438%	18.228%
Relative ROR	1.000	0.703	4.026	7.776
Interest	5,997,067	5,585,119	305,171	106,776
Operating Margins	-2,254,135	-3,134,032	462,588	417,308
Margin as % Revenue	-2.610%	-4.105%	10.029%	7.698%
Operating TIER	0.624	0.439	2.516	4.908
Revenue Deficiencies				
Uniform ROR= 7.114100	7,614,570	8,123,128	-189,016	-319,542
Deficiency % Rev	8.816%	10.641%	-4.098%	-5.894%
Uniform % Mar=5.703223	7,614,570	7,940,826	-211,585	-114,670
Deficiency % Rev	8.816%	10.402%	-4.587%	-2.115%

The Cost of Service Study often indicates that some rate classes subsidize other classes. In this example, the total system requires a \$7.6 million (8.8 percent) rate increase to realize the cooperative's desired ROR. In order for each rate class to produce the same ROR, the residential rate class revenue must increase 11 percent while the commercial and large power rate class should receive a decrease. The Board should focus on the level of margin produced by each rate class and the resulting magnitude of subsidy that exists. The Board's task is to determine the appropriate class revenue requirement and thus the level of interclass subsidy that will exist in the proposed rate design.

ity subsidized those who used little. This wasn't a problem initially, because there weren't a lot of seasonal or irrigation accounts. Life, however, has changed since the 1930s and 1940s, when most of Wyoming's co-ops were formed. Now both types of accounts are common.

Most co-ops have made the necessary adjustments to the customer charge so all consumers are paying their own way or, at the least, being subsidized much less.

The appropriate balance is what the board develops as a line extension policy. These policies vary according to rate class. A more expensive line built for a shorter-lived business must cost the new account more than a less-expensive line built for a long-lived property.

Fifth, review results regularly

Rates should be reviewed monthly, bi-monthly, or quarterly—along with expenses—to ensure that the necessary balance for each rate class is being achieved. Changes in interest rates, a damaging winter storm, and increased maintenance costs are some of the issues that can warrant a rate adjustment if they weren't anticipated adequately when the rates were developed.

Changes in board philosophy can also affect rates. Increasing electricity sales was the goal of most boards in the early days of rural electrification. Conservation can be the motivation now.

Rates can spur consumers to action in either direction. A board driven to conserve can make it expensive to use more than a specific amount of electricity each month. A board

Table 3: Allowable Line Extension Investments

Calculations of allowable line extension investment under proposed rates for residential rate class

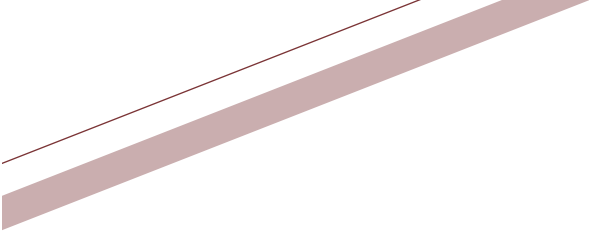
	Very Low Usage	Low Usage	Class Average Usage	High Usage	Very High Usage
Billing Units					
Allocated Annual kW	3.66	18.29	48.57	54.88	73.18
Annual kWh	1,200	6,000	15,929	18,000	24,000
Total Annual Billing (kWh)	203.43	297.15	491.01	531.45	648.60
Cooperative's Allowable Line Extension Investment					
5 Year Project Life	\$208.73	\$146.78	\$18.65	\$0.00	\$0.00
10 Year Project Life	\$354.21	\$440.18	\$618.02	\$655.11	\$762.58
20 Year Project Life	\$496.61	\$727.37	\$1,204.69	\$1,304.25	\$1,592.69
30 Year Project Life	\$566.69	\$868.69	\$1,493.39	\$1,623.69	\$2,001.19
35 Year Project Life	\$589.89	\$915.47	\$1,588.95	\$1,729.43	\$2,136.41

The cost of service study can identify the dollar level of line extension investment supported by each rate class at different usage levels. In this example, the cooperative can provide the first \$1,588 of new line extension to the average residential customer assuming the service is in place for 35 years.

Fourth, review/adjust line extension policy

Line extension is the term used to describe building a power line out to a new service. If someone buys a piece of land four miles from the nearest power line, and he or she wants central-station electricity service on that land, he or she will have to pay the co-op to add four miles to the existing power line. How this construction is paid for is covered by the co-op's line extension policy.

Line extensions have an impact on the co-op's capital credits repayment schedule, equity management, cashflow, and credit-worthiness. The co-op should not absorb a greater expense than what the margins will recoup from the consumer over the life of the service. If the co-op absorbs less expense than what the margins will recoup, then the co-op is charging the consumer too much.



motivated to flatten peak loads can make it expensive to use electricity during certain times of the day.

Rate changes are avoided

Despite all these possibilities, boards are reluctant to change rates. They resist until there is solid evidence that no other options are available.

Rate development is fairly complicated. It requires a good understanding of the basic finances of the co-op, the financial situation of the membership in general, and the financial health and outlook for the community as a whole. Perfect rates are not possible. A complete absence of subsidies between classes-and sometimes between members within one class-is also rare.

Learn as much as you can

Members are welcome to ask questions. Wholesale rates are set by the board members at each generation and transmission co-op. Retail rates are set by the board members at each distribution co-op. Distribution co-op directors have a smaller voice at the G&T level, but they do have a voice. The most important characteristic of a distribution co-op is local control. What does that mean? It means that input from each member is valued. If you have a question or comment, don't hesitate to speak up.

This article was adapted by Kris Wendtland from an article by David Hedrick of C.H. Guernsey and Company which was previously published in the Spring 2005 issue of Management Quarterly. It printed in the April, 2008, issue of the WREN magazine and is reprinted with permission.