How Do Commissions Set Embedded Cost Rates?

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I. Overview

A. A traditional utility has a legal obligation to provide "bundled retail electric service," consisting of:

1. ***Physical distribution service***: This is pipes and wires. PEPCO provides this service to all residents. It is a monopoly service; PEPCO is the only legal provider within its service territory.

2. ***Electricity,*** produced by generating units (owned either by the utility or third party producers) and transmitted to the distribution service over transmission lines.

B. A non-utility business sets its own prices. Those prices are disciplined by market forces, since the business faces competitors who also set their own prices. Because an electric utility monopoly lacks competitors, ***its prices are set by the Commission***. The Commission sets those rates in a formal proceeding called a general rate case.

C. In setting rates, a commission tries to achieve ***five goals***:

1. Efficient utility performance, in terms of daily operations and long-term infrastructure planning

2. Efficient customer behavior

3. Strong utility financial condition, so it can attract debt capital and equity capital at reasonable cost

4. Availability and reliability of utility services

5. No undue discrimination by the utility against customers[1]

D. Ratemaking is based on ***cost evidence*** submitted by the utility and other parties. The process has three main steps:

1. ***Annual revenue requirement***: Determine the total annual dollars necessary to run the company.

2. ***Cost allocation***: Allocate the annual revenue requirement among major customer groups.

3. ***Rate design***: With each customer group, set customer rates.

Each step is discussed next.

II. Annual revenue requirement

A. The annual revenue requirement is a ***projection*** of the ***total annual expenditures the utility needs to make to provide obligatory service***. It's the total dollars we want the utility to collect from its ratepayers in a year. Those annual expenditures consist of ***expenses*** and ***cost of capital.***

1. ***Expenses*** include operations and maintenance costs (e.g., labor and fuel), taxes, depreciation.

2. ***Cost of capital*** consists of (a) interest payments to lenders and (b) return on equity to shareholders.

Revenue requirement = (O&M + taxes + depr) + [(interest rate * debt) + (ROE * equity)]

Or, more concisely:

Revenue requirement = expenses + return on rate base

Where "rate base" is the depreciated book value of all investment.

[1] Other goals often mentioned include affordability, environmental protection, and economic development. The explicitness and importance of these other goals vary by state.

III. Cost allocation

A. Cost allocation assigns to various customer classes and services the costs properly attributable to those classes and services.

B. Customer classes are groups within which the customers are roughly homogeneous in terms of quantity consumed and load characteristics. Examples of customer groups are industrial, commercial, industrial, and street lighting.

C. Two categories of costs

1. ***Variable costs***: costs that vary with the amount of electricity consumed (e.g., fuel costs, water treatment costs, electricity for water pumping)

2. ***Fixed costs***: costs that remain constant regardless of the amount of electricity consumed (e.g., physical facilities for distribution, transmission, generation, headquarters building, trucks and other equipment)[2]

D. The goal is to ***allocate costs to the cost-causers***. This approach seeks to achieve efficiency and fairness.

1. For variable costs, the process is straightforward: since these costs vary by the amount of kwh (energy) produced, we place these costs in the per-kwh rate.

2. Fixed costs require more thought to determine cost causers. We build some infrastructure to meet "peak demand": the simultaneous demand on a hot August afternoon. Many commissions allocate fixed costs to the classes in proportion to each class's contribution to peak demand.

[2] Fixed costs can then be subdivided into (i) costs directly attributable to particular customer groups or services (e.g., substations serving particular large customers), and (ii) common costs incurred for multiple purposes (e.g., shareholder relations, CEO salary).

IV. Rate design

A. Rate design sets the prices within each class. The goal is to cause the sum of all customers' payments to produce total revenues equal to the revenue requirement. That is:

1. Cost allocation determines how many dollars to collect from each class or service.

2. Rate design determines how to collect dollars from the individual customers within the classes and services.

B. Most customer classes pay both a fixed charge and a variable charge. To calculate these charges, the commission takes the fixed and variable costs attributable to each customer group, and divides them by some "billing determinant" appropriate for that group. Specifically:

1. The fixed charge (which varies by customer group) collects some portion of the fixed costs attributable to that group. It is calculated by dividing that portion of fixed costs by the number of group members, to get a charge in the form of $/customer.

2. The variable charge collects the variable costs attributable to the class, plus those class fixed costs not included in the calculation of the fixed charge. It is calculated by dividing these costs (the variable costs and the remaining fixed costs) by that class's projected volume of sales (kWh), to get a rate ($/kWh).[3]

V. Recent variation in rate design: "Decoupling"

A. Traditional rate design creates a conflict between two goals: reducing energy consumption, maintaining the utility's financial strength.

1. A utility has fixed costs and variable costs. A utility's rate design has both a fixed charge and a variable charge. The problem is this:

[3] The reader may be asking: Why does the fixed charge collect only a portion of fixed costs, with the remaining fixed costs collected through the variable charge? Why not collect all fixed costs through the fixed charge, and collect only variable costs through the variable charge? Good question. This traditional practice is under discussion throughout the country. The "decoupling" solution, discussed next, is becoming a common response.

a. The fixed charge collects only some of the fixed costs. (In 2007, before decoupling, for example, PEPCO said that only 60% of its fixed cost was allocated to fixed charges.)

b. The variable charge collects the rest of the fixed costs, plus variable costs.

c. Because the variable charge is designed to collect fixed costs, a reduction in sales reduces the utility's profit.

2. A regulatory effort to reduce consumption, so as to reduce pollution and avoid unnecessary infrastructure investment, therefore weakens the utility's finances. That conflict has caused some commissions to adopt "decoupling."

B. Decoupling means ***decouple revenues from sales***: determine the annual revenue requirement, then help the utility recover that revenue requirement even if its sales decline.

C. While there are several forms of decoupling in the U.S., key elements are common. The first two ratemaking steps are unchanged: The Commission still establishes the annual revenue requirement, then allocates that revenue requirement among customer groups. Decoupling affects only rate design, at most.

VI. Ratemaking Procedure and Strategy

A. Ratemaking is *prospective only*.

1. Once the Commission sets rates, the rates are fixed until the next rate case. This means that:

a. if the rates produce profits higher than projected (because, e.g., expenditures were lower than projected), the utility does not refund the excess to customers; and

b. conversely, if the rates produce profits lower than projected, the customers do not have to make up the difference.

2. Under either of these circumstances -- rates producing too much profit or not enough profit -- the past is past. The solution is to change rates prospectively. To change rates prospectively, that is, to raise or lower them in response to excess or insufficient profit, someone has to initiate a

new general rate case. That someone can be the utility, the Commission, the Office of Peoples Counsel, or anyone else.

3. Because there are no refunds of profits exceeding the authorized level, the utility has incentive to save on expenses. Every expense dollar it saves, relative to the expense level used to set rates, goes to its profit.

B. Some costs get *special treatment* outside of general rate cases

1. Rates set in a general rate case are based on projections. Because these rates are prospective only, there is risk (actually, a certainty), that results will vary from the projections. Those variances can cause financial uncertainty for the utility.

2. To address financial uncertainty, Commissions use several exceptions from general rate case treatment.

   a. "***Fuel adjustment clauses***": Fuel is a volatile cost. Many commissions allow the utility to shift the volatility risk to customers, by passing through to ratepayers the actual fuel costs (the oil, coal, gas or nuclear fuel used to produce electricity) each month. So cost recovery is based on actual costs rather than projections. (Technically, what is passed through is the variations from projections used to set base rates.)

   b. "***Riders" for special costs***: Sometimes there are unusual expenses or capital costs which are (a) the result of a specific mandate or authorization, (b) high and (c) unpredictable. "Smart grid" and special pollution control expenditures are examples. A commission might decide to allow the utility to collect the costs on an "as incurred" basis, through a special line item on the customer bill.

   c. "***Deferrals" of unexpected costs***: Suppose a major cost occurs that the rate projections did not anticipate. Examples include major storm costs, or accident costs, or new federal environmental requirements. A commission might allow the utility to record these costs on its books, then argue for their recovery in the next rate case. This is an exception from the prospective nature of ratemaking, because it allows the utility to recover costs incurred in the past.

   d. "***Single issue ratemaking***" allows special increases in base rates for specific costs, without the utility having to file a general rate case. It is similar to riders.

C. Rate case decisions normally do not create operational commitments or obligations

1. A rate case creates no utility commitment or obligation to spend money in any particular way, unless there is a specific Commission directive. Example: Suppose a utility's application for rate increase includes a projection that employee salaries will rise 10 percent. Suppose further that the Commission then approves this projection as reasonable, and includes that cost in the annual revenue requirement.

2. If the utility keeps the salary increase to 8 percent, the utility keeps the difference. Neither the company's projection, nor the Commission's decision, created any obligation to raise salaries by 10 percent. The same goes for any other expenditure.