

Let San Francisco Public Utilities drought pricing conform to California Proposition 218

The San Francisco Public Utilities (SFPUC) must seriously revisit water and wastewater pricing. The current increasing block tariff approach (IBT) approach has many drawbacks. The IBT system (also called tiered) offends Proposition 218, does not work as intended (effectiveness), is inconsistent with economic theory, inequitable as a rate charge, and allows for opportunistic resellers and master meter tenants to thwart conservation efforts.

Prices are signals. These signals must accurately reflect water's marginal use value and act as a director of present and future resource-allocation. The market process for determining a price is by search. Utility systems are price seekers. Price seekers by changing the price will impact the quantity demanded. No *dues ex machine* will descend on the general manager of a water company and reveal the specific price required.

Utilities unilaterally setting price (water rates) by fiat have a difficult task. They must generate sufficient information to develop signals (rates) that will simulate an approximation to what rates would be generated in by market transactions. Failure to set the correct rates not only impacts water users but will have major ripple effects throughout the service-area economy. A classic example of this is when PG&E continued to pay premium prices for Canadian natural gas after the U.S. natural gas markets became deregulated in 1985. This author estimated this miscalculation cost the PG&E service area (N. California) billions.

In the Alchian and Allen industry-classification world, price seekers may operate in an open or closed (fiat) market-environment. An increase in price for a commodity/service with a non-infinite elastic demand will result in less revenues being generated. A decrease in price for a commodity/service with a non-infinite elastic demand will result in more revenues being generated. If the elasticity of demand is inelastic then an increase in prices will result in an increase in revenues and a decrease in price will lead to a decrease in revenues.

The second law of demand cannot be ignored by utility decision makers, that is; the longer a real price increase stays in effect the greater the number of substitutes that increase demand elasticity. This could be reflected in crop changes and the replacement of grass lawns with synthetic laws, etc.

There is a two step approach to setting rates. The utility must first determine what its reasonable costs will be and set rates that will generate revenues sufficient to cover these costs. This approach is called the cost of service approach or revenue requirements. They are the same as to final outcome. There are two generally accepted methods for determining revenue requirements the utility approach and the cash needs approach. The specific approach used tends to be a function of ownership.

Under the utility approach the cost of service is the sum cost of operating expense, taxes, depreciation, and rate of return on rate base. Rate base being defined as historical costs less depreciation plus an

allowance for such things as work-in-progress. Rate base is allowed to earn a specified percent based often on like-industry comparables. The cash-needs method estimates the cost of service as the sum of operating expenses, payments that might be made in lieu of taxes (In California it is questionable under Prop 218 in California if these funds can be used for anything other than utility purposes), debt-service payments and capital expenditures not financed by debt capital or financial contributions.

The cash-needs approach is generally used for municipal rate making and the utility approach for state regulatory purposes. In California this would be for IOUs regulated by the CPUC. While many states permit municipalities (munis) to self-regulate, some states regulate both IOUs and munis.

Legality

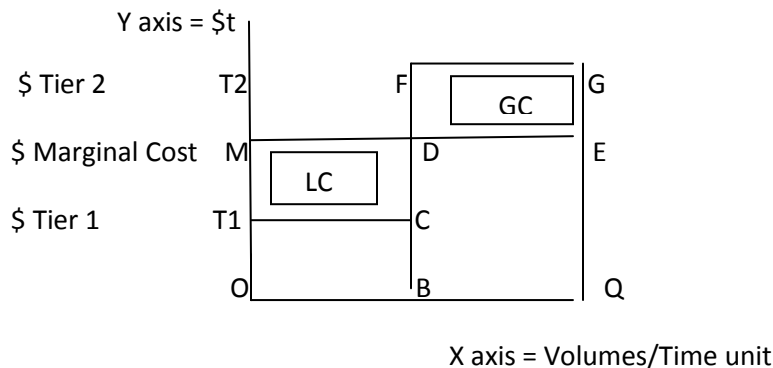
The current two-tier system used by the SFPUC, also known as increasing block tariff (IBT) appears to be in violation of 1996 state-Proposition 218 that requires voter approval before any new municipal tax may be added. Many ratepayers agree with the position of the Howard Jarvis Taxpayers Association (HJTPA); that, “voter approval would be required for any tax masked as drought pricing such as tiered drought water rates.”

SFPUC revenues are mainly derived from rates. Other revenue sources such as property sales must be used to offset rates. Rates are a tax and must be treated as such.

The 2006 California Supreme Court in Bighorn Desert Agency vs Vewril ruled that water-rate increases or decreases are property related fees and subject to Prop. 218. Clearly, the current SFPUC retail IBT pricing-system must be put to a vote to be in compliance with Prop 218.

Proposition 218 implies no subsidies between buyers of city utility services and no charges to exceed the cost of service. Figure 1 shows how the IBT (two or more rate-tiers) system violates Prop 218. These violations can be shown conceptually by the following KIS diagram (Figure 1).

Figure 1
(KIS)



On the vertical axis of Figure 1 are shown the Tier 1 (T1) price, the marginal cost (assumed linear) of producing water (M), and the Tier 2 (T2) price. On the horizontal axis is the volume of water sold. The total volume of water sold is shown by the segment OQ. This segment is comprised of purchases OB from Tier 1 sales and BQ from Tier 2 sales.

The rectangle area created by multiplying segments OM (dollars) and OQ (volume) are the total cost of producing OQ volumes (rectangle OMEQ). This area also represents the revenues that are required from the water (wastewater) rates to cover costs. AKA the revenue requirements approach to ratemaking.

If rates are set at M and the volumes remained OQ, costs and revenues-required would be equal. The area under a marginal cost curve is the total cost. Setting all flow-rates equal to their marginal cost would be compliant with Prop 218 providing they met the reasonable and allowable criteria for all costs incurred in the production process.

There is no viable system, unfortunately, for investigating which are reasonable costs and which costs and should be allowed in the SFPUC into their ratemaking process. One of the required ingredients in any well-run organization (theory of the firm) is an anti-shirking function. The deliberate nullification of the Revenue Bond Oversight Committee (RBOC) by leading members of SFPUC-BAWSCA, compliant members of the RBOC, and the usual political hangers-on ensured the sudden death of real anti-shirking activities by a properly constituted and independent oversight group.

Setting rates for the lower Tier 1 rate produces revenues equal to the rectangle OT1CB. These Tier 1 supplies are sold below the cost of production ($T1 < MC$). This difference between the cost of production and revenues paid is equal to the rectangle T1MDC. This rectangle is labeled "LC" for less than production cost. This level of output therefore must be subsidized by volumes sold above cost at a higher rate (T2).

Tier 2 (T2) rates generate revenues equal to BFGQ for volumes equal to BQ. This revenue is DFGE greater than the cost of producing BQ volumes at a cost of BDEQ. Under the IBT regime these excess revenues (DFGE) are used to pay for the Tier 1 short falls (T1MDC).

Subsidies and rates that are less or greater than output costs are not permitted under Prop 218. Until a Prop 218, compliant vote, the SFPUC should be made revert to a single variable cost ratemaking rooted in marginal cost analysis.

Effectiveness of IBT pricing

The question must be asked: Does the IBT or two-system really work? A Zurich study by the Center for Energy Policy and Economics Department of Management, Technology and Economics entitle Urban Water Demand and Water Rate Structure Over Decades found;

“Using primary pricing data from 125 Texas communities spanning more than two decades (1981 – 2003)... The adoption of water pricing structures alleged to promote water conservation (e.g. increasing block rates) does not lead to expected results as in

our sample (13447 observations) consumption increased by 5-6 % ... after the change occurred.”

Inconsistent with economic theory

Hugh Sibly, an Australian economist specializing in water issues uses orthodox economic analysis to illustrate how two tier-ascending pricing leads to inferior economic-efficiency results. He shows that given the marginal cost of water (differing as a result of drought vs non-drought periods) that is different from either the first tier or second tier with different demand schedules results in inefficient use of urban water resources. He calls the result of this inefficient pricing dead weight loss (DWL). Professor Sibly concludes his discussion with:

“This analysis indicates that an IBT can never be efficient when there are heterogeneous customer demands. At every efficient level of the volumetric rate there is a DWL created by the IBT.”

This loss of economic efficiency and thwarting of consumer preferences is what Professor Sibly is illustrated by using the DWL concept. Misguided (not all) regulations at all levels of government have cost the U.S. economy many Gross Domestic Product (GDP) points and made the populace worse off.

Opportunism

Master-metering is a system whereby many customers are hooked up to one meter. Many San Francisco dwellings are unfortunately master-metered. Master metering is anti-conservation in that there are no real incentives to conserve and this leads to beggar thy neighbor behavior. It also opens the door for opportunistic resellers of SFPUC water, who likewise have no incentive to conserve. This is not a small share of the market. It must be addressed.

Small and inexpensive water-meters with Internet connectivity (offsite reading) exist in abundance, especially in the world’s leading high-tech area. Some brave politician must stand up and mandate the installation of individual meters and demand conformity to Prop 218 by marginal cost pricing.

Note – The analysis is conceptual and simplified for understanding These concepts are accurate. On my website www.h2oecon.com/podcast.html I will place a more expansive discourse on the above.