A REVIEW OF THE RETAIL TARIFFS OF HYDRO-QUÉBEC DISTRIBUTION

CHRISTENSEN ASSOCIATES ENERGY CONSULTING, LLC

8. RATES AND COSTS

Use of Embedded and Marginal Costs in Rate Design

Traditional rate design at both vertically integrated utilities and distribution utilities has relied on embedded costs. Embedded costs were selected early in the regulatory era as the proper basis for rate development because they reflect the financial costs of the utility and are relatively stable and free from controversy when compared with other valuation methods. Rate-of-return regulation still makes use predominantly of embedded costs despite the fact that competitive markets are driven by marginal cost.

Some utilities have incorporated marginal cost into aspects of pricing. "Marginal costs" are the change in costs that accompany a change in electricity demand. The relevant costs are those of fuel, variable labor and maintenance, and capacity. In competitive markets, marginal costs can be measured by the prices of electrical energy, ancillary services (like regulating and operating reserves), and capacity. In non-competitive markets, marginal costs are generally quantified for energy and capacity components.

Because the generators that serve demand change over time, marginal costs change over time. Because the generators that can serve changes in demand depend upon the locations of the changes in demand, marginal costs also vary by location.

Hydro-Québec's marginal costs are quite unusual, as mentioned previously. In all but about 300 hours, marginal costs are flat due to the effect of hydraulic dominance and transmission constraints. In remaining hours, in which imports from other jurisdictions are possible, marginal costs may vary, especially at times of low system reserves.

Canadian utilities often use some form of marginal energy (and reserves) cost as the basis for allocating generation and supply costs.[49] Class allocation of such costs can be performed by creating load weighted marginal costs by class or rate and sharing the embedded costs of supply based on those shares.

Additionally, for some time retail pricing practitioners have often used marginal cost for pricing of parts of blocked tariffs and TOU rates, and demand response rates often set prices in high cost periods as a function of day-ahead wholesale market prices. This report has noted several instances in which the use of market-based pricing can facilitate the resolution of rate design debates. Standby and interruptible pricing offer examples.

Utilities have also undertaken marginal cost analyses of transmission and distribution functions, since business decisions require information on the incremental impact on costs of decisions about the grid. A common example involves line extension policies and the allocation or assignment of costs of lines to remote locations.

[49] For example, Manitoba Hydro uses a weighted energy allocator for generation costs that amounts to marginal energy cost, with time differentiation by season and three time periods.