Regulatory Actions Which Have Affected Cogeneration

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BACKGROUND:

Regulatory influences are powerful in the field of cogeneration. Since most cogeneration facilities tie in with the local utility for standby power and, in many cases throughout the United States, receive a price break on the cost of natural gas to run the cogenerator, the government expresses their need to protect the consumer, the utility, and the cogeneration facility with regulations.

PURPA

The Public Utility Regulatory Policies Act of 1978 (PURPA) is a legacy of the energy policy of the late 1970's which attempted to substitute the government's fuel-choice and energy conservation judgments for those of the marketplace. The dramatic run up in oil prices by over 230% between 1970 and 1980 was viewed as a threat to both national security and economic stability. As a result, the government instituted a number of conservation measures, the most prominent of which was PURPA.

Enacted in 1978, PURPA was intended to conserve fossil fuels by stimulating the production of electricity from renewable sources and increasing the efficiency of electricity use. This objective was accomplished by a policy that favored, and continues to favor, renewable resource generation and cogeneration.

While PURPA has helped to stimulate the development of a non-utility generation sector, it has saddled some utilities with substantial

contractual obligations for electricity supply that are not cost effective, even in today's market, and clearly will not be viable in a competitive market place. These noncompetitive PURPA contracts constitute a significant percentage of utilities' stranded costs, and are an impediment to the development of competitive electricity markets.

PURPA requires utilities to purchase power from "qualifying facilities" (QFs) at the utility's avoided cost of producing power. QFs consist of small power producers (SPPs) using renewable resources and cogenerators. Partially as a result of PURPA, non-utility generation, which includes independent power producers (IPPs) as well as QFs, increased by 275% during the period 1978-1992. The non utility sector now accounts for 8% of the total U.S. generating capacity.

PURPA is an excellent example of a regulatory program that, while sounding reasonable on its face, has led to serious adverse consequences. In an unregulated market, a cost-minimizing utility would purchase outside power when doing so is cheaper that its own generation. There would, therefore, be no need for PURPA-style regulation. In a regulated market, utilities may have strategic reasons not to purchase outside power (even if it is less expensive) since doing so may constitute a threat to their monopoly position. Therefore, requiring a utility to purchase power from QFs at the utility's avoided cost sounds like a policy that would simply stimulate an efficient market and would lower prices to consumers. This has not, however, been how the statute has been implemented.

STANDARD OFFERS

Under PURPA, states have promoted QF electricity by adopting methodologies that yielded high avoided cost estimates and required utilities to purchase QF power under unfavorable conditions. As an example of this the California Public Utilities Commission (CPUC) set up a series of power purchase contracts that defined avoided cost as that which the utility sells to its customers. So, in the late 1980's and early 1990's the three major California utilities were required to enter into contracts with cogenerators to buy back their excess power at prices of $.08 - $.10 per kilowatt. These Standard Offers, as the contracts were called by the utilities, caused a rampage of electrical production that was sold to the utilities under the guise of cogeneration. A plant may be

set up to produce electricity and thermal energy in the form of hot water or steam and simply blow off much of the thermal energy in order to enjoy the high rates of electricity sales back to the utility while buying cheap cogeneration gas, often from the same utility as in the case of San Diego Gas and Electric and Pacific Gas and Electric, two of the largest public utilities in California.

These Standard Offer Contracts were instituted when the price of fossil fuels was at or near their peak and contracts implemented at those times did not have re-negotiation rights when the price of fuel went down, as it has in the late 1980's and 1990's. State utility commissions did recognize these disparities eventually and removed this onus from the utility's requirements to enter into long term contracts at prevailing power selling prices. They allowed utilities to define what "avoided cost" meant in the form of what it cost the utility to generate their own power and it was this figure that would be used in buy-back Standard Offers. Of course, innovative bookkeepers within the utilities began to show "avoided costs" that were favorable to them and not necessarily the true picture. In this country the pendulum has a big swing. Now, it is not very cost efficient to sell power back to a utility who is only offering $.02 -$.03 per kilowatt.

During the high Standard Offer contract period, and there are still contracts in force that are paying those 8 to 10 cents per kilowatt, the utilities tried to force the power producer to prove they were meeting the FERC efficiency guidelines of 42.5% overall efficiency. Squabbles ensued between the producer, who did not have the instrumentation to measure thermal output, and the utility as to who should monitor the FERC efficiency guidelines. Some utilities threatened that if it were shown that a producer had violated the FERC efficiency guidelines, the cogeneration gas price break that they had been enjoying would not only be retracted, but that a penalty of the past three year's price break would be imposed.

For large cogenerators, 300 kW to 2.0 MW, this could mean coughing up hundreds of thousand of dollars in penalties. Many cogenerators compromised with the utility and promised to sell back only during peak usage periods when utilities had to put on their least efficient units to meet demand. Generally, peace is prevailing between cogenerator and utility at this time with the advent of the de-regulation of electricity now looming as the solution to the issues of buying electricity from the low cost producer.

As a footnote to these issues it may be enlightening to show the cost of operation of a small scale cogeneration facility located in an area that allows gas to be purchased at the utility rate. To produce 120 kW of electricity, 10.7 therms of gas is consumed per hour. Gas costs under the most favorable contract price is about $.30 per therm. On gas usage alone the price to fuel the cogenerator is $3.21. Therefore, for 120 kW produced the cost per kW for fuel gas is $.0268/kW. Maintenance costs are often stated as a cost/kW and will run about $.013/kW. These two costs alone equal $.0399 or almost 4 cents a kW and none of the investment price of the facility is yet included. You can see why an offer to buy electricity, excess or not, at 2 to 3 cents/kW is counter productive to operating a cogeneration facility solely to sell power back to the utility.

DEREGULATION

The de-regulation of electricity is now in the news. California has taken the lead in this by implementing a law that went into effect in March of 1998 to allow any user of electricity to buy their power from anyone they want. This, of course, includes the utility from which they have been buying their power.

Three main factors influence the cost of electricity: A) Generation; B) Transmission; and C) Distribution. The utility, by the way, will still be the transmitter and distributor of the electricity via their existing transmission and power lines strung over the countryside and the streets of the community. So, it is basically the generation of electricity that will cause costs to vary from the present overall cost of electricity. Any savings to the consumer will have to come from this source and if the "avoided cost" of electricity production is 2 to 3 cents, as the utilities are claiming, then the overall savings of electricity supplied by a third party will be a percentage of those cents.

That is not to say that the consumer's savings will be minuscule. Some power producers, existing utilities and others, will have an excess of power or be able to generate at lower costs than other producers. They will pass these cost savings on to the consumer. Competition will enter this heretofore oligarchy, consumers will have choices and inevitably savings will be realized by the consumer.

The California utilities have exacted their pound of flesh from the regulators, however. Since they were previously granted rate approval

based on their invested capital and this will no longer be the case, the utilities will exact a stranded cost from consumers who choose to leave their system and buy power from a third party. This "stranded cost" may be as high as 3 cents a kilowatt, but whatever it is it will only last until the year 2002. At that time the CPUC believes the utilities will have recouped their investment of existing generation plants and the market will be free of all encumbrances. Until the next round of regulation, at least!

ABOUT THE AUTHOR

Mr. Bernard F. Kolanowski is the president of Kolanowski & Associates in Carlsbad, CA. His company specializes in applying small-scale cogeneration packages to commercial and industrial users.

Mr. Kolanowski has more than 35 years experience in the sales and marketing of capital equipment including various forms of alternative energy and cogeneration. He was national sales manager for Ingersoll-Rand's compressor line, setting up a network of more than 100 dealers across the U.S. He was V.P. of sales and marketing for Environmental Control Products, Inc., a manufacturer of incinerators and waste heat recovery equipment.

As business development manager for Riloy Stoker Takuma, Mr. Kolanowski was responsible for sales to developers, municipalities and contractors of large, mass burn, incinerators and waste heat recovery boilers. As national sales manager for Solar Turbines, Mr. Kolanowski's sales team sold cogeneration projects incorporating Solar's gas turbines to the oil fields.

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