

7.3 Analysis of Electric versus Gas Competition

Two case studies serve to illustrate the role DSM programs can play and the effect they can have in the competition for commercial/industrial customers. These involve Baptist Hospital of Florida in Miami, and the Cape Canaveral Air Force Station near Titusville.

In assessing the impact of Hurricane Andrew and its need for reliable electric service, Baptist Hospital of Miami became interested in building a cogeneration facility and requested assistance from City Gas. Although the financial benefits of self-generation were one motivation, Baptist Hospital was also interested in the operational benefit of increased reliability of electric service in the event of hurricanes or other natural disasters. The assistance provided by City Gas led to a September 1993 cogeneration feasibility study by Day & Zimmerman Engineering sponsored jointly by City Gas and Baptist Hospital. This study concluded that the capital costs of a cogeneration facility could be recovered in 6.3 years through the resulting energy cost savings, rather than continuing to meet its energy needs through FPL's current rates. Assumptions included in this Day & Zimmerman study included a gas cost of \$2.85 per million BTU, a 3% gas price escalation, an equipment availability factor of 95%, and O&M costs of \$.008/kWh.

Baptist Hospital provided the Day & Zimmerman study to FPL for assistance in analyzing the results. In October 1993, a study was prepared by FPL, replicating the Day & Zimmerman methodology, but using different inputs and assumptions. This FPL study indicated a simple payback period of 18.5 years for the cogeneration facility--nearly three times the Day & Zimmerman estimate.

Also during October 1993, according to CILC program records, FPL began to discuss the option of CILC participation with Baptist Hospital. In late 1993, FPL commissioned a study by Kenetech Energy Systems (KES) to evaluate the Day & Zimmerman study. KES specializes in the design and development of cogeneration facilities. The KES study, produced in January 1994, showed a simple payback period of 12.9 years for the cogeneration facility versus FPL's base rates, and concluded "cogeneration is not economic" for the hospital.

The study also found that upgrades to Baptist Hospital's distribution system would address its reliability concerns, and that the required investment could be paid for within five years through savings accruing from CILC program participation. Baptist Hospital eventually began participation in the CILC program on November 21, 1995; however, the distribution improvements were never built.

The KES study used the same assumptions as the D&Z study for natural gas cost, equipment availability factor, and O&M cost per kwh, and a slightly higher gas price escalation factor of 4%. In summary, KES concluded "... the [D&Z] study contains several

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aggressive engineering, energy analysis and financial assumptions." For example, KES noted that the D&Z study incorrectly used a heat rate of 14,107 Btu/kWh instead of 15,644 Btu/kWh, and failed to take into account the additional fuel consumption by **standby generators**. These two discrepancies understated annual costs of the cogeneration facility by a combined \$110,000. Additionally, the KES study stated that in estimating "additional costs" (financing fees, attorney costs, engineering review, etc.) the D&Z study had gone against the common industry practice of projecting 30% of financed project costs. Using this yardstick, the D&Z study underestimated total financed project costs by \$500,000.

A more recent case study involving City Gas and FPL's CILC program has been the proposed addition of self-generation facilities at Cape Canaveral Air Force Station (CCAFS). CCAFS adjoins the Kennedy Space Center, and is the site of NASA's unmanned satellite and missile launches.

FPL contacted CCAFS in July 1994 regarding participation in the CILC program. At the time, CCAFS was considering the installation of self-generation facilities, fueled by either natural gas or diesel to meet federally-mandated 20% energy reduction goals by the year 2000. To maximize its conservation efforts, CCAFS began to consider both the installation of the generators and participation in the CILC program.

In October 1995 CCAFS and FPL executed a CILC Agreement, however to date no CCAFS substations are yet operating on the CILC rate. The CILC tariff has been specifically worded in preparation for CCAFS or other space program facilities joining the program. The First Revised Sheets Number 8.654 and 8.655 contain wording that exempts CCAFS from load control interruptions due to "an event whose nature requires that space launch activities be placed in the critical mode ... as designated and documented by the NASA Test Director at Kennedy Space Center and/or the USAF Range Safety Officer at Cape Canaveral Air Force Station." This exemption, which would have applied for a total of 32 days surrounding various launches in 1995, was provided because a load control interruption could significantly disrupt a launch, and according to FPL because the customer "had a national security need for power in limited instances."

As of 1996 Cape Canaveral Air Force Station is still considering the purchase of a generator offered at low cost by the Tennessee Valley Authority. After conversion to natural gas, the generator may be used by CCAFS to produce some on-site self-generation. However, self-generation would interfere with CCAFS qualifying for the CILC rate. According to FPL, if the customer self-generates, its Supplemental Service rate, instead of the lower CILC rate, would apply. According to FPL, this is because "the CILC rate applies to those who use FPL as their service provider whenever service is available."

7.3.1 Conclusion

In both of these cases, customers pursued obtaining certain services from a gas utility, but resolved their needs partly through an electric DSM program. In each case, the electric DSM program played a role in the outcome of a competitive situation, resulting in the electric utility either fully or partially retaining the load of a customer considering the option

7.3.1 Conclusion

In both of these cases, a customer sought to obtain certain services from the gas utility, and resolved their needs partly through an electric DSM program. In each case, the electric DSM program played a role in the outcome of a competitive situation, resulting in the electric utility either fully or partially retaining the load of a customer who was considering a gas end use. In both cases, the ratepayer-provided funds for conservation programs also assisted the utilities in their competitive positioning.

In the case of Baptist Hospital, the customer eventually received conflicting assessments of the feasibility of the cogeneration facility, and once the CILC program was brought into play, the customer may have simply opted for the certainty of CILC's reduced rates. Though CILC may have influenced the outcome, there is no certainty that if the cogeneration facility had been built that it would have been in the customer's best interest.

8.6 Analysis of Electric/Gas Competition

Peoples Gas has faced direct competition from electric utilities in the context of their commercial/industrial conservation programs. The company has not retained the brief in-house analyses performed prior to 1995, however Peoples Gas did provide two studies to staff performed by Savage Engineering in 1995. These studies involved comparison of chiller options for Heartland Medical Center and Mount Sinai Medical Center. In the case of Mt. Sinai, the economics of the gas and electric chiller options were very close.

In purchasing a chiller, Mt. Sinai Medical Center considered separate proposals from FPL and Peoples Gas during 1994 and 1995. Both the FPL proposal and the Peoples Gas proposal included participation in commercial/industrial conservation programs, which would reduce the cost of the equipment to the hospital through rebates.

In November 1994, FPL prepared a study comparing the installation of an electric motor chiller and a gas engine driven chiller. FPL's analysis found that the savings resulting from installing the 2000 ton high-efficiency electric chiller plus participation in the CILC program would provide a 3.8 year payback of the hospital's investment. By comparison, the FPL study showed a 4.7 year payback for a 2000 ton gas-fired chiller. FPL noted other negative factors such as the potential need to increase plant maintenance staffing, environmental impacts such as engine noise, the limited number of gas engine chiller applications of this size, uncertainty about future gas prices, and the potential supply cutoffs inherent in the interruptible gas rates proposed. The FPL study noted that the gas chiller would not meet the customer's needs as defined by the hospital.

In February 1995, Mt. Sinai began participation in FPL's CILC program. Apparently, the decision between a gas engine versus electric motor chiller had not yet been made. In June 1995, Peoples Gas commissioned a study by Savage Engineering to compare electric and gas chiller options.

The Savage study compared a base case 2300 ton York electric motor chiller to a 2300 ton York gas engine chiller, taking into account the net heat recovery savings. The study showed a 4.6 year payback for the gas chiller in comparison to the electric chiller. To equalize maintenance cost differences, the gas option included the cost of full maintenance service coverage. In both cases, the costs of preventive maintenance on the chillers were included. To prevent the additional noise of the gas engine chiller, the cost of an engine enclosure was included.

The Savage study's payback period of 4.6 years for the gas chiller was remarkably close to FPL's 4.7 year gas chiller payback estimate. In addition, the Savage study responded to FPL's concerns about issues such as additional O&M staffing and noise reduction. After taking the two studies into consideration, Mt. Sinai Medical Center selected the electric chiller.

The case study indicates that at times, Peoples Gas' conservation programs do compete head-to-head with an electric DSM program for a major customer. In such an instance, it is clear that the competitive advantage provided through DSM or conservation program savings can make the difference in a customer's decision.

8.6.1 Conclusion

In the *Mt. Sinai* case, the difference in the payback periods for the electric and gas may have been the primary reason Peoples Gas did not win the customer. But factors beyond the equipment costs, such as customers' general lack of familiarity with natural gas, may be standing in the way of gas utilities. FPL itself cited the limited track record of large gas chillers as a negative in their study. Engine driven chillers have been so recently developed that normally conservative business managers may tend to select the "known" over the "unknown" unless a substantial cost or operational advantage for gas can be proven.