Wingate at Brighton in the Brighton, MA sees healthy savings from cogeneration

Wingate Healthcare at Brighton, a 150-bed facility in Brighton, MA, has completed an energy conservation project highlighting cogeneration. Wingate projects it will slash its net energy costs by $33,000 a year.

Wingate at Brighton is primarily a long-term care facility, with 75 percent of its beds dedicated to long-term care and the other 25 percent designated for short-term rehabilitation and sub-acute care. Operating round-the-clock, Wingate's energy needs are tremendous. Aegis Energy Services of West Springfield, MA installed the 75-Kw Tecogen cogeneration unit at Wingate to generate electricity and provide a significant portion of the building's hot water needs. Before installing the cogen system, the Brighton, MA facility was using electricity to meet its sizeable hot water needs, space heating, as well as for rooftop heating and cooling, and some kitchen equipment. With its consistent year round thermal load, Wingate was a textbook candidate for cogeneration.

Cogeneration is the process of using a single fuel, in this case natural gas, to generate two forms of energy, usually electricity and thermal energy. Natural gas is used to fire the engine in the cogenerator, which produces electricity as well as thermal energy that is employed to heat domestic hot water, space heating, and for other uses.

"Many years ago, I tried cogeneration in a facility as a means to bring down costs and it was fairly successful. Since then, cogeneration technology has come a long way and with the high energy costs in the Brighton, MA, we thought Wingate would be a good place to test cogeneration again", said Dick Herrick, president of Wingate. "Due to the energy efficiency of cogeneration, we were also eligible for an energy efficiency rebate from KeySpan Energy Delivery, which helped offset the first cost of the cogeneration unit."

Reducing demand charges while saving on hot water.

At Wingate, the cogenerator produces 75 kilowatts to supplement electrical usage during peak loads and reduces the electrical demand charges the company pays. However, the hot water produced as part of the process is where the company realizes the most significant savings. "We divert the hot water to the kitchen and laundry, storing it in a 605-gallon tank, said Rico Gilberti, executive vice president of Marcott Builders, an affiliated company responsible for management of Wingate's real estate. "Once those needs are met we store the hot water in a smaller 513-gallon tank for domestic use, and any remaining thermal energy goes toward space heating."

With the thermal energy captured from the cogeneration process, Wingate does not need to run its three domestic hot water boilers during the summer months at all, and the boiler load during the heating season is dramatically reduced. The same is true of the building's heating load; the

direct-fired rooftop units are no longer needed in the non-heating months, and the load during the winter months is far lower. During the summer months, any excess hot water is sent to a dump radiator, where it's cooled and returned to the cogenerator.

Gilberti estimates that Wingate's overall energy savings were $2500 for the first month the cogenerator was fully operational. In addition to the electric demand charges and hot water savings, the increased, round-the-clock gas usage also improved Wingate's load profile, making the company eligible for lower natural gas rates.

Since starting up in January 2001, the cogeneration system has quietly and efficiently reduced energy costs at Wingate by over $30,000 per year. Based on the long-term results at the Wingate's Brighton, MA facility, Wingate Healthcare plans to expand the use of cogeneration at some of its other facilities.