

CENTRAL MASSACHUSETTS

New research center calls for CHP expansion, cogeneration at medical school in Massachusetts





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Contract Facts

512,000
square-foot research center

17.5
megawatts of electrical
generation

450,000
pounds
of thermal capacity per hour

\$6.2
million
in savings per year

Scope

Veolia's energy consulting group, SourceOne, was retained to provide project management and technical assistance on the expansion of a combined heat and power (CHP) plant supporting a medical school campus's new 512,000-square-foot research center. Services included budget development, equipment sizing, design, compliance review and coordination of the plant's construction team. The group also conducted a full-campus metering assessment.

Challenge

The facility, unveiled in 2013, would be a universal resource for students and staff alike. Co-funded by the Massachusetts Life Sciences Center, its construction took place in the heart of campus, housing five learning communities, a 350-seat lecture hall, fitness center, full-service café and common atrium.

But because these spaces would grow its electric generation by 7.5 MW, cooling capacity by 4,000 tons and thermal capacity by 60,000 lbs/hr, its existing power plant no longer sufficed. The project required a cogeneration system that would allow the CHP facility to handle this energy output in a cost-efficient manner.

Solution

Medical centers have too much at stake to rely on grid and backup power, which can cause latency in patient care and associated diagnostics. As Independent Engineer for the project, SourceOne determined that expanding the college's current CHP facility was the most economical way to maximize operational uptime and minimize energy costs. The medical center installed a 7.5 MW gas-fired

combustion turbine to replace the school's oil-fired steam boilers, and delivered a thorough allocation study to school administration during the plant's commissioning.

Result

The newly renovated utility system not only accommodates the center's higher electric generation volume, but produces enough cogenerated steam from that volume to heat buildings across campus. The school saw 58,000 MWh of annual electricity savings,

amortizing the project's cost in less than three years, and has since reduced carbon emissions at a rate that is consistent with its goal to become climate-neutral by 2060.