– CHAPTER SIX –

2007/2008 SERIES: ENABLING CAMPUS GROWTH AND OPTIMIZATION

PRESIDENTIAL PERSPECTIVES

a higher education presidential essay series

Campus Energy

A Resource to Be Optimized and Potential Learning Laboratory for Environmental Decision Making

ARAMARK HIGHER EDUCATION

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A Resource to Be Optimized and Potential Learning Laboratory for Environmental Decision Making

Douglas E. Zemke, President at Millikin University

Institutions of higher education are mission-driven. You might even say these institutions are fanatical in their zeal to pursue their stated mission. It is the education of the "whole person" that inspired Millikin University's mission, and it is the curriculum and co-curriculum activities that deliver on the promise of that mission. We believe that we are preparing our students for professional success in their chosen fields, preparing them for democratic citizenship in a global environment, and helping them to lead personal lives of meaning and value. All of us engaged in higher education are in the business of developing intellectual capital capable of deep engagement in a chosen profession as well as deep engagement in the issues and needs of their local and global communities. Higher learning institutions must find new, creative ways to provide the financial and human resources as well as the learning environment for this intellectual development to take place.

Campus energy consumption is one of the leverage points explored to free up additional resources that could be redeployed to other priority needs and create the learning environment across the entire campus.

Millikin began its pursuit of optimizing energy use with energy curtailment programs for holiday break periods. We first inventoried the energy consumption patterns for all of our buildings, which included about one million square feet of space. This inventory also included analysis of our capacity to regulate and monitor energy consumption. Secondly, we consulted with faculty and staff to determine which buildings and building areas would need to be in use. We then discussed whether alternate arrangements could be made to offer a more energy-efficient environment for those short periods. Once the value of this initiative was explained and understood, there was strong buy-in from the entire campus. The plan was implemented, and results were tracked to allow for valid data collection for comparative use. When compared to normal historical campus operations for these short periods of time, the curtailment period reduced the energy consumption by 29 percent. These impressive results stimulated the desire to seek other means to reduce energy consumption.

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Our next step was to actively search for grants that would fund energy conservation projects. During 2004, 2006, and 2007, we were able to qualify for the State of Illinois Clean Energy Community Foundation Grants. As a result, more than 3,600 light fixtures were upgraded in 11 campus buildings, thereby reducing daily energy consumption. This resulted in the permanent reduction of electricity demand in these facilities by seven percent. In many cases, we not only reduced energy consumption but gained in the brightness and longer life cycles of the lamps.

Our next step was to look for optimization opportunities in other existing buildings and specifically through system upgrades and new control devices. Previously, our central campus cooling system allowed the full flow of chilled water to be distributed to all buildings on the loop regardless of their demand load. Through the installation of chilled water system bridges at each building, we were able to gain efficiency and user comfort by optimizing the distribution of the chilled water to match required loads.

The installation of a light-use boiler for summer hot water production was our next target. In the past, summer hot water production as well as fringe season heat was generated by a large steam boiler designed for winter demand loads. In essence, we were producing and maintaining hot water levels for a demand that did not exist. An energy-efficient 250 hp boiler replaced an 800 hp boiler; the results were predictable—creating significant efficiency.

In addition, economizers were installed on all three main boilers to reduce consumption of natural gas. These devices create a more effective burn of natural gas; and therefore, less consumption needed to meet demand.

Our final step was to upgrade heating system distribution and controls. We upgraded 10 large air handlers in three major buildings with energy-efficient motors and coils. New energy management system controls were installed or older controls upgraded that allowed for the specific scheduling of unit use during unoccupied periods of time while maintaining the necessary comfort levels.

Overall, the curtailment program, lighting upgrades, and systems optimization are responsible for reducing natural gas consumption by 15 percent and electrical consumption by four percent, as compared to our fiscal year 2004 baseline. The reduction has become more significant as energy costs have risen and encouraged us to look for more conservation opportunities.

Now, where do we go from here, and how do we sustain our efforts?

Millikin is at the initial stage of creating an energy council with the objective of promoting energy conservation efforts with the largest energy consumption groups on campus. The obvious assumption is that our largest energy consumers will have the most impact on overall energy reduction. This will also aid us in continuing to develop deeper buy-in across campus and, most importantly, creatively develop new opportunities through the highest energy user groups that could be replicated by other user groups.

Currently there are three existing campus buildings enrolled in the LEED-EB Pilot Program. This is the U.S. Green Buildings Council's nationally accepted benchmark for the design, construction, and operation of high performance green buildings (also referred to as creating sustainable environments). Program certification is dependent on maintaining operational efficiency while minimizing environmental impacts, such as efficiency of the site for water and energy consumption, indoor environmental quality, and the supplies, materials, and processes used on site. Millikin's outsourcing service partner for building maintenance and grounds, ARAMARK, has been a strong proponent in encouraging us to do this and has guided and supported our activities as we seek certification.

There are very obvious economic reasons to optimize the use of campus energy. These reasons include the opportunity to redeploy savings to other areas of need (especially in the curricular and co-curricular areas), to help deflect the current rising cost of energy, and to help restrain the percentage increases in tuition and fees—a source of considerable public concern.

However, there are further opportunities for both teaching and learning experiences. The concept of the creation of a sustainable campus may just be the kind of high-impact opportunity institutions of higher learning can grasp as a learning opportunity for students. There are numerous opportunities available to address the sustainable campus and to gain campus-wide participation. At this point, we have barely scratched the surface of these opportunities.

There are both curricular and co-curricular opportunities for teaching environmental literacy as an interdisciplinary approach. The research opportunity for both faculty and students at the baccalaureate level is apparent and fits into Millikin's existing theory and practice model of faculty/student research. There are also other opportunities in community outreach and community partnerships

There is a significant new opportunity for the administration to explore the areas of purchasing supplies and materials, energy, food, and food services. Solid waste reduction and strongly-supported recycling is a must, and the establishment of a waste reduction ethic could become a given of campus culture.

The master plan for Millikin's campus includes retrofit or creative reuse of buildings, new construction with high performance building standards, use of grounds, green space, and the choice of landscaping that offers the opportunity to make a strong statement about a sustainable environment and its importance to the campus community. On our horizon is an analysis of opportunities for green power options such as photovoltaic cells, wind turbine generation, and geothermal heat pumps.

Looking ahead, energy conservation and the search for renewable energy will be a continual challenge for all institutions, offering additional cost savings opportunities; however, it will also offer a great model for our local communities and enhance the learning environment of today's college students.

Douglas E. Zemke *has been president of Millikin University since 2003. Since becoming president, he has focused the University's energies on leadership development, revitalizing curriculum with an emphasis on developing international/global educational opportunities, establishing fiscal responsibility, and building strong ties to Millikin alums and the Decatur community. A 1966 Millikin graduate, Zemke served as Dean of the Tabor School of Business from January 1998 to July 2001, and he is a former member of the Millikin Board of Trustees from 1995-1998. He also has more than 30 years of business management experience in the telecommunications industry with the former Illinois Bell, AT&T, and Cincinnati Bell.*

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