

Creating an Efficient Campus

by Shan Bates

Executive summary

Universities are challenged with managing a diverse range of facilities like no other organization. Energy and security requirements vary greatly among the different types of buildings. All too often, systems operate within silos as isolated, incompatible infrastructures. This is costly and hampers growth. This paper describes how to design a more cost-effective, future-proof integrated infrastructure system to maximize security and energy efficiency.

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Executive summary

University campuses are complex, dynamic environments that serve a diverse array of needs and thousands of people. The challenges faced by university leaders are daunting: reduced endowments, shrinking budgets, rising energy costs, aging systems and equipment, increased enrollment, rising crime on campus, and the pressure to demonstrate a commitment to sustainability. These pressures are motivating institutions to reevaluate their energy demands and related conservation programs, as well as reconsider their existing security strategies. Surprisingly, these disparate challenges can be met with an elegant solution that harnesses the power of integrated technology and ongoing energy efficiency services. The result is an efficient campus that becomes an optimal learning environment; saves money; and protects people, property, and our planet.

Introduction

Today's universities face several challenges: decreasing budgets due to the weak global economy, international competition to attract the best faculty and students, increased security demands on growing campuses, and meeting increasing societal pressures for sustainability. Higher education leaders are tasked with addressing these issues while simultaneously keeping to their core organisational goals and strategies of delivering the best education, research, and development outputs.

In the midst of everything taking place across the world's universities—from budget scandals to students hurting other students—university leaders can leverage energy efficiency services and powerful integrated technology solutions to contain costs, integrate efficiency throughout the entire campus, and provide protection for people and assets.

This white paper describes solutions for higher education executives and highlights strategies to maximize stretched budgets and meet sustainability goals while creating an optimal learning environment for their students.

Budget crisis facing the world's universities

Due to the current economic climate, educational entities are facing difficult budgetary decisions. Some startling budget issues faced by universities around the world include:

- The projected cumulative budget deficit in the US, for all 50 states and Washington D.C., in the year 2011 alone is \$142 billion.^{1,2}
- 34 states have already been forced to cut spending at their colleges and universities, resulting in furloughs, layoffs, and increased tuition.³
- 97% of endowments were affected or significantly affected by the economic downturn.⁴
- In 2010, the UK higher education funding body, Hefce, announced to institutions how much they would receive in 2011 from a fund of £7.3b a £573m cut from the 2010 budget.⁵ The news of university fee increases of 200% caused massive riots in the UK in late 2010 and early 2011.
- The majority of European universities rely on public financing for the bulk of their incomes; cuts in government spending are taking a heavy toll in many countries.⁶
- In Australia, Monash University planned to cut 300 staff to gain \$45M AUD in salary cuts. Wider cuts may be expected partly due to the federal government's new student visa requirements: almost 16% of all Australian universities' revenue is from international student fees.⁷

With the world facing economic uncertainty, one might think that fewer students would be attending universities. However, it's exactly the opposite; university applications are on the rise:

- US private institutions have noted increases in enrollment despite the recession.⁸
- University enrollment in Sweden observed a 29% increase in 2009.⁹
- Some of New Zealand's eight universities are raising their entry requirements to try to control student numbers.¹⁰

While recessions may benefit university enrollment, they have left schools worldwide with less money and more students, forcing higher education leaders to seek other cost-cutting measures.

¹ University of California – Berkeley, February 2010 Report

² The Chronicle of Higher Education, March 2010

³ University of California – Berkeley, op. cit.

⁴ National Association of Independent Colleges and Universities, December 2008 Survey

⁵ BBC News Article, March 2010

⁶ Impact of the Economic Crisis on European Universities, European University Association, May 2010 Report

⁷ Higher Education Supplement The Australian 10/20/10 "Shrill Response to Falling Numbers" by Gavin Moodie

⁸ The Financial Crisis And Recession: Situational Description, November 23 2009, County Administrative Board of Stockholm

⁹ National Association of Independent Colleges and Universities, July 2009 Survey

¹⁰ University World News, June 2010 Article

The impact of energy costs on universities

Facing a budget crisis, university leaders must consider appropriate cost-containment measures to survive in such an environment. Options include hiring freezes, postponed capital expenditures, or layoffs. In a recent survey of American university leaders, 83% of respondents pointed to energy management as the single most relied upon cost containment strategy.¹¹

Let's take a look at global energy trends: typically, it's the fastest growing expense in operating budgets.¹² In the European Union, energy costs have increased 47% since 2003 and are projected to grow another 30% within the next 5 years.¹³ Energy costs are not simply rising, they are accelerating, due to increased global demand, declining energy availability, and the ever-looming threat of energy legislation.

At colleges and universities, energy consumption has a significant impact on financial and environmental interests alike. New construction, aging infrastructure, financial constraints, increasing energy costs, and environmental responsibility are motivating institutions to reevaluate their energy demands and related conservation programs. In a time where tuition costs and competition for qualified students are increasingly growing concerns, institutions must take every measure possible to reduce such a large line-item in their budgets.

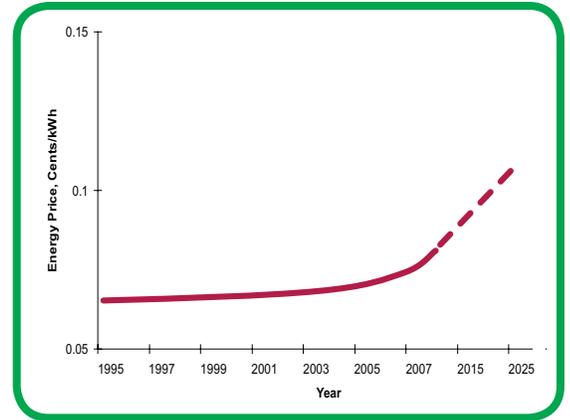
Energy conservation contributes to the triple bottom line

Energy conservation has a direct impact on a university's financial bottom line: reduced consumption equals reduced spending. It can also improve the productivity and efficiency of those who work and study in a building. Unlike other

cost saving measures, energy management can improve the environment of learning at an educational institution. Finally, energy conservation provides measurable demonstration of a university's commitment to sustainability. This not only assists in attracting the best faculty, staff, and students, but also helps engage students on the subject in a meaningful, tangible way.

So, how does energy conservation contribute to the financial bottom line? Energy is the largest controllable operating expense. As a variable cost on a university's balance sheet, the amount of energy used and resulting utility bills can be decreased utilizing active and passive energy efficiency and conservation measures. Passive energy efficiency is the use of basic energy efficiency devices and materials (including energy efficient light bulbs or motors), improving power factor, fixing compressed air leaks, and installing better insulation and windows. Active energy efficiency is implementing permanent change through measurement, monitoring and control of energy usage. These measures can actually pay for themselves over time. In fact, energy savings can help offset budget shortfalls. Methods to maximize energy efficiency on campus will be discussed in more detail later in this paper.

Not only do energy efficient campus buildings save money, they are also more comfortable and can contribute to a more effective learning environment. One study by the International Centre for Indoor



¹¹ The Chronicle of Higher Education, April 2009 Survey

¹² IBM Global Survey, November 2007

¹³ Eurostat and Dr. Stephan Sharma, Electric Market Forecasting Conference, 2009

Environment and Energy at the Technical University of Denmark (DTU), showed that pupils' performance increased by an average of 15%, and up to 30%, with improved indoor climate conditions.

Research has also shown that students with the most daylighting¹⁴ in their classrooms performed 20% better in mathematics and 26% better in reading comprehension compared to those students with the least amount of daylighting. Moreover, a high quality classroom environment captures the interest of students and parents alike as they make their college selections from the highly competitive field.

As the leaders of tomorrow, university students worldwide are energized and passionate about sustainability and preserving natural resources. Experience Inc. surveyed approximately 2,500 students and recent graduates that overwhelmingly expressed concern about climate change. Eighty-one percent saw significance in working for an environmentally aware company, and 79% said they would most likely accept a job at an eco-friendly company over a conventional one.

The goals achieved through energy conservation promote awareness of the environment and our limited natural resources—important topics to evangelize in a university setting. Institutions have the potential to become “laboratories” for students to study engineering and environmental principles. This fosters a sense of leadership in the student body and contributes to environmental responsibility and lower energy demand. Students can monitor energy technologies in use, conduct campus building energy audits, and increase energy visibility within the student community.



Sustainability is visible through a self-guided Living Lab interactive display

Bond University, situated on the Gold Coast of Australia, uses an interactive energy display to showcase its world-class Mirvac School of Sustainable Development, a facility with a mission to advance the teaching of sustainability principles and practices.

- The building management system is the data collection repository and main information source for the Living Lab interactive display
- Sub-meters continually compare actual performance to energy benchmarks
- Use of natural light and mixed mode ventilation achieve a 75% reduction in energy usage
- Automated lighting control includes occupant detection and daylight adjustment
- 82% reduction in carbon footprint
- Renewable energy produced by solar, wind, and regenerative drive lift
- First educational institution to earn 6 Star Design Rating by the Green Building Council of Australia
- Received International Sustainability Award from RSIC

¹⁴ daylighting.org's definition is using natural light to illuminate building spaces

Security concerns on campus

It's a fact – college and university campus crimes are on the rise. Studies have demonstrated a link between increased enrollment and an increased frequency of attacks, and recent violent events are bringing campus security initiatives to the forefront of educational administrators' agendas. However, violent crime isn't the only risk that institutions of higher education face when it comes to security; campuses are often home to sensitive research projects requiring restricted access or contain facilities with invaluable artifacts.

Campus crimes are up, and there are larger areas to secure

According to 2010's *Campus Attacks: Targeted Violence Affecting Institutions of Higher Education*¹⁵, violent attacks have risen on campuses in tandem with increased enrollment. What's surprising is that over 60% of US higher education crimes in the past century have occurred within the past two decades. Coupled with the challenges of securing larger areas and government-mandated crime reporting, campus officials are under significant and rising pressure to protect their students, faculty, guests, and university assets.

The majority (70%) of campus crimes reported over the last 108 years have occurred on-campus, while 19% were off-campus, and 11% non-campus. "Off-campus" is defined as entities that may be used by students or staff, yet are not associated with the school; "non-campus" refers to buildings that are officially recognized by the college, including athletic stadiums and university-owned hospitals. Most campus crimes are isolated to a single building, and 90% of the perpetrators are affiliated with the college or university where the attack occurred.

When incidents occur, everyone knows

In the age of Facebook®, Twitter®, texting, instantaneous news, blogs, and mass communication, any physical barriers to rapid communication have virtually been rendered obsolete. In his book, *Socialnomics*¹⁶, Erik Qualman shares some statistics that could be unnerving from a public relations standpoint in the wake of a major security incident at a school: 96% of Generation Y has joined a social network. Even more daunting: 80% of Twitter users are on a mobile device. People can make updates anytime, anywhere, to anyone.

Additionally, today's parents, guardians, and family members are able to stay in closer contact with their collegiate loved ones through social media applications like Facebook, Twitter, and Skype®, and can follow sites that are specifically affiliated with the school. Needless to say, family members have a potentially limitless number of instant sources of information concerning the institution's security and emergency preparedness.

In this age of instantaneous information, school officials are more challenged than ever to keep students, faculty, and property secure while maintaining a positive public perception of their educational institution.

Address campus crime at every level

A school's main mission is to provide relevant education to tomorrow's workforce. One must draw a fine line between the overprotection of students and staff and creating a safe learning environment. Thinking along these lines, what are some options for reducing or eradicating crime altogether? School leaders have many options to improve security measures and emergency preparedness—from metal detectors at building entrances to tracking suspicious behaviors and

¹⁵ Drysdale, D., Modzeleski, W., and Simons, A. (2010). *Campus Attacks: Targeted Violence Affecting Institutions of Higher Education*

¹⁶ Qualman, E. (2009-2010) *Socialnomics*

using texting for rapid, mass notification. With all of these ideas, ranging from the “big brother” mentality to essentially laissez-faire, how can university leaders determine the optimal balance of security and freedom for their unique campus?

While finding the ideal solution can be very challenging, there are many measures that address security on campus without detracting from the main institutional goals of education. An optimal campus security plan has four main components: protect, secure, capture, and act. By following this four-part strategy, university officials can ensure a comprehensive approach with multiple measures for optimum security on campus.

Protect

Security officers gain the most value from integrated systems that include elements such as access control, fire safety, visitor management, intercom communications, video surveillance, and biometric verification. All of these solutions converge to deliver enhanced security. By aggregating data from disparate systems, integrated security systems give security staff a comprehensive view of everything happening on campus. Thus, they gain a deeper understanding—and far more control—over security events. Real-time, actionable information enables more accurate situational analysis and faster response time to events.

For example, one well-known public university installed integrated access control and video surveillance to monitor and secure extremely valuable animal medications at its top-ranked veterinary school. Such measures can deter theft, protect people and assets, and detect and provide evidence of security breaches if they should occur.

Secure

Safer environments are created when facilities are properly secured and security protocols adhered to. A robust security infrastructure ensures that all components work together seamlessly to create

effective layers of security. The concept is simple: security countermeasures can be layered in such a way that protection increases the closer one gets to mission critical assets. For example, access to sensitive areas like research labs or data centers could require an access card and biometric identity verification (such as a fingerprint, iris scan, etc.).

If an event were to occur, what processes are in place to isolate the incident? An intrusion detection application can alert officials of an incident while an electronic access control system can initiate an automatic building lockdown to prevent entry or egress in an at-risk area.

Capture

We all know how important it is to document a security breach, which is why the third step of an optimal security plan, “capture,” can be of the utmost importance.

For example, some federal governments have tied financial aid to crime reporting. In the US, to qualify for financial aid, higher education institutions must disclose and report all campus crimes annually under the Clery Act/Crime Awareness and Campus Security Act of 1990. Non-compliance with the Clery Act could mean a forfeit of up to 80% of government funding; not only do campus officials have to worry about dealing with a public relations storm after a major event, they also must have detailed reporting mechanisms for any incident occurring on campus.

- > **Protect**
 - People
 - University assets
- > **Secure**
 - Buildings
 - Areas
- > **Capture**
 - Actions
 - Incidents
- > **Act**
 - Mass notification
 - Student identification
 - Energy management



Integrated security

The Georgia Institute of Technology, a top-ranked research university, protects its students and facilities with a campus-wide security system that integrates access control with video surveillance, intrusion detection, and centralized database management. The system operates over the existing campus LAN, saving the university capital costs, and features a single personal ID card that can be used for access control, security, and for retail point-of-sale purposes. This solution also enables distributed administration for individual academic departments so that each department manager can grant appropriate levels of access and have complete control of their respective facilities.

Taking into consideration mandated crime reporting, this capability not only serves to capture the actions of suspicious individuals, it can also record incidents for future investigation or prosecution.

For example, one private institution added security systems to increase surveillance capabilities and streamline reporting. The solution included over 600 cameras to protect people and assets, including the \$400 million dollar special collection, which includes rare books, photographs, manuscripts, and other archival collections.

Act

Systems in place are not complete without a well-devised action plan. The same security management system previously discussed can also utilize mass notifications to instantaneously alert students to stay away from at-risk areas. In the event of an unthinkable emergency (security or otherwise), this messaging can also be used to alert emergency contacts about their loved ones on campus.

In addition to serving as a tool for emergency communications, this type of system is also proving to be of assistance as a communication channel to notify faculty and students when class is canceled due to inclement weather.

Leveraging integration beyond security goals

While campus security is obviously of key concern to college administrators, an integrated security solution can also provide an educational institution with additional value. An integrated security system can exchange data with school IT departments so that access cards can be used for student IDs, computer and network access, campus transportation, meal services, and library use. Visitor management applications can be integrated with access control systems and interfaced with local or Federal “watch lists” (terrorist, sex offender, etc.), thus enhancing security and streamlining operations.

Schools that integrate their campus-wide security systems with energy management, a practice known as “green security”, also reap the financial benefits of reduced CapEx and OpEx. When a university finds the right combination of security and building performance measures, it can leverage this convergence of technology to save energy and money. Funds that would have otherwise been spent on energy can be reinvested back into essential university projects. The next section will address this topic in more detail.

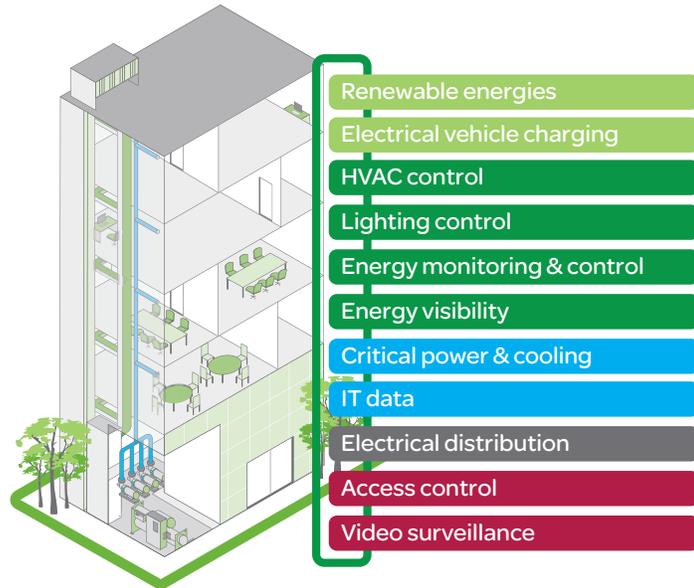
Designing an integrated infrastructure to maximize security and energy efficiency on campus

The case for convergence

Perhaps no other type of organisation has as diverse a facility infrastructure as that of colleges and universities. To serve populations of students that can reach 30,000 or more, institutions run self-sufficient cities in-and-of-themselves. A campus has office buildings, hotels, student housing, data centers, restaurants, retail shops, sports facilities, entertainment complexes, and classrooms. Research universities and specialty schools can have museums, medical centers, agricultural centers, high security biomedical laboratories, and many other buildings with very unique characteristics and varying energy needs.

With such diversity of use, the operations and maintenance staff responsible for campus facilities must consider not only the energy and security factors that exist today, but also those that may exist in the future as the campus continues to evolve. Therefore, a university must have an infrastructure that provides the flexibility to adapt and grow with the institution.

All too often, universities operate multiple, siloed systems that essentially equate to disparate, incompatible, and isolated infrastructures. Such systems are costly to install, operate, and maintain as they do not share equipment, cabling, software, etc., and because facilities management has to retain the expertise to operate and maintain each system. The most costly aspect of this situation is the fact that siloed systems do not share data—a lost opportunity when it comes to optimizing both energy efficiency and security.



An efficient campus functions as a true ecosystem

Due to the wide variety of building uses on campuses, energy demands change from building to building. In residential housing for example, students usually have some degree of manual control and occupant override of heating, ventilation, and air conditioning (HVAC), and lighting. In a classroom building, the facilities staff will likely schedule the HVAC systems and dictate room temperature setpoints with little or no occupant override capabilities provided. Even tighter controls may be specified for laboratories, where strict control of airflow, humidity, and temperature may be required.

So, what is special about conserving energy at colleges and universities? And, what energy management strategies can be implemented that result in multiple benefits uniquely suited to the campus setting? To start, the most important

energy management strategy is an integrated infrastructure that allows for the seamless integration of all building systems, services, and applications. This is the foundation for an efficient campus that functions as a true ecosystem, rather than a myriad of diverging systems that operate independently and do not share information.

By integrating the key domains of an enterprise—power management, IT room management, process & machine management, building management, and security management—a campus can be optimized for maximum efficiency. Specifically, an integrated infrastructure aggregates data from multiple systems, enabling university leaders and facility directors to see, measure, and manage energy use across the entire campus.

Furthermore, a truly integrated infrastructure should be based on open, non-proprietary standards. This can help universities leverage existing equipment and reduce redundant devices and software. An infrastructure based on open standards can also accommodate new technologies as they emerge without the need for major reconfigurations.

Finally, an integrated infrastructure that enables communication between HVAC control, lighting control, security, IT networks, electrical power networks, and energy metering can control energy consumption, provide comfort and security to occupants, and protect property.

Elements of an integrated infrastructure

Power management

The integration of power management applications form a solution which ensures the availability of power, reduces energy bills (water, air, gas, electricity, and steam), limits CO₂ emissions, and enables the use of renewable energy. Examples of solutions include: power measurement, intelligent power and motor control, renewable energy conversion, and electric vehicle charging technologies.

Within this domain, universities can harness the power of the smart grid. Communication with the smart grid enables universities to modify their patterns of energy use to avoid expensive peak rates, allow for the integration of on-site generation, and become generally more efficient regardless of time of day. Smart grid information also allows informed decisions regarding dual sources. For example, universities that desire the greenest forms of generation can alter energy use patterns to fit times of day when the renewable contribution to the grid is at its highest.

IT room management

Campuses often have data centers full of academic records and student data; IT solutions should ensure the availability of servers, protect critical data and applications with ultra-secured power and fast server adjustment, and optimization of energy costs with cooling and energy reports. Within campus data centers, uninterruptable power supply (UPS) and critical power and cooling are important components of a smart and reliable university infrastructure.

Process and machine management

As mentioned throughout this paper, a university has many different types of buildings across its campus. Another type of facility that could be included in this portfolio is a physical plant or water/wastewater plant. A comprehensive higher education solution could include the running of a productive plant, ensuring efficient processes, and machine performance. This optimizes engineering, operations, energy, and maintenance costs.

Another area that this type of solution could positively affect is within the university food services organisation: making sure that processes are run in the most optimal way while ensuring efficiency and cost savings.

Building and security management

A vital aspect of an efficient campus is the native integration of building and security systems via an intelligent Building Management System (iBMS). This solution, based on open, standards-based technology, enables universities to fully integrate all building systems on one network—across enterprises—from a single software platform. A single user interface, accessible locally or remotely via the web, gives users a complete view of all university systems, including heating, ventilation, air conditioning, lighting and lighting control, energy metering, access control, video surveillance, intrusion, fire and smoke detection, electrical distribution, and power quality and monitoring.



An efficient campus: Aarhus University, Denmark

Aarhus University implemented an integrated infrastructure to seamlessly unite building, security, and energy management. The project covers a total area of 555,000 m², and the system is scaled to handle the requirements of 75,000 users. A single, integrated solution aggregates data from multiple systems—allowing facility managers to see, measure, and manage energy use across the entire campus. This data sharing across the enterprise also ensures optimal security with clear, real-time, actionable information. Security staff can quickly and accurately analyze and respond to events, creating the safest possible environment for the school. Other benefits include:

- Enhanced learning environment and improved student performance—due to a comfortable, healthy indoor climate
- Reduced CapEx—all applications run on a single network, and components are co-utilized by both security and building management systems
- Operational efficiency—one single system to operate, maintain, and service improves productivity and provides ease-of-use
- Open, standards-based platform ensures that the university can incorporate new technologies as they arise
- Intelligent chip cards provide a convenient and comprehensive system for identification, access control, and debit card use that prevents unauthorized access and minimizes the need for cash transactions.

Sustaining performance over time: building portfolio life cycle strategies

No strategy for designing an efficient campus would be complete without considering the ongoing performance of buildings throughout their life cycles. Buildings can be designed with energy efficiency and security in mind; however, as campuses mature, the efficacy of these measures often diminishes over time. Operation and maintenance solutions, along with energy efficiency services, can assure that campuses sustain optimal performance throughout the life cycle of the building portfolio.

Remote energy monitoring and energy dashboards

The first way to do this is to use metering and remote energy monitoring to measure energy use on campus, because you can't manage what you don't measure. Utilization of a remote energy monitoring system is a proven solution that uses web-based technology to gather and report on an entity's energy data, combined with the expertise to advise and guide decision makers on how to take action, seize cost-saving opportunities, and continually improve performance.

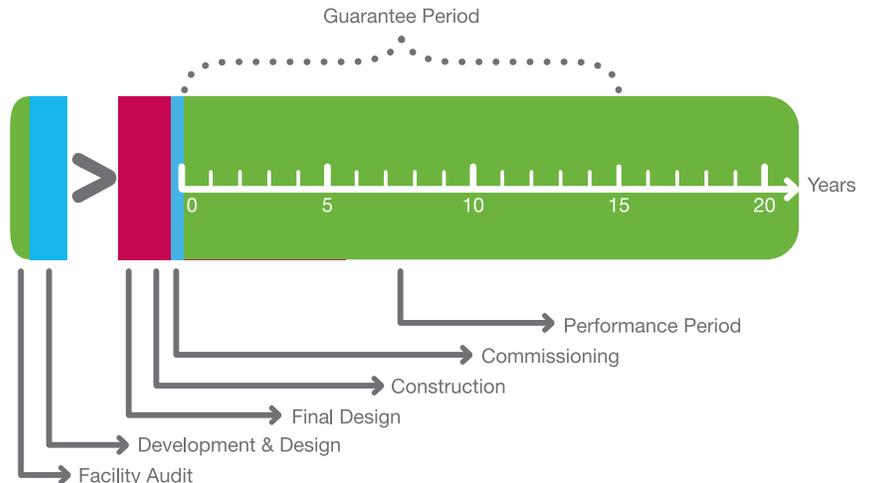
Energy dashboards and kiosks showcase energy data, such as consumption used in a specific dormitory or academic building. Within higher education, universities have successfully used dashboards to motivate building occupants and encourage students to reduce their energy consumption with "green" competitions. Remote energy monitoring and energy dashboards are solutions that help make energy use visible, resulting in significant energy savings and increased awareness among all stakeholders.

Performance contracting

University leaders and facility managers are often forced to defer maintenance and equipment upgrades in order to control costs. Performance contracting is an alternative project delivery method available to alleviate additional costs and help finance a project. It serves as a funding method that uses guaranteed energy savings to implement facility improvements, equipment upgrades, and energy-efficiency techniques.

Specifically, energy savings from utility expense reductions are used to pay for projects over the course of several years. Utility savings are realized through the implementation of various energy conservation measures (ECMs) that may include: high efficiency lighting retrofits, computer controlled energy management, and the replacement and redesign of older, inefficient HVAC equipment and systems, among others.

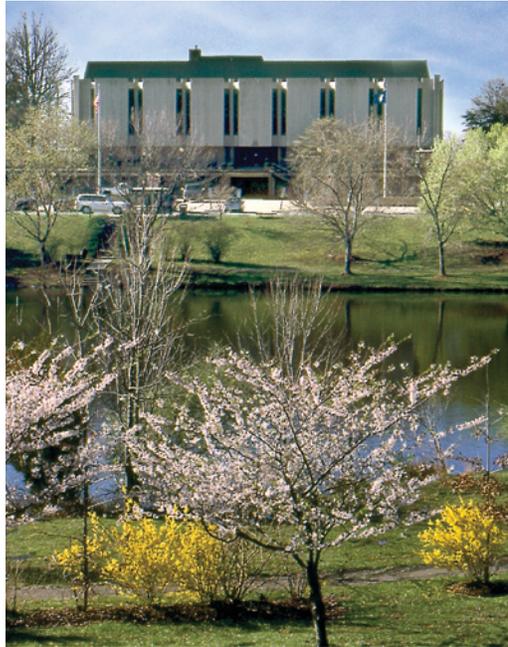
With a performance contract, upgrades of interrelated systems are bundled together into one comprehensive project to provide a customized solution based on a customer's needs. This maximizes the savings potential and allows the cost of improvements to become manageable expenses.



A performance guarantee assures that annual savings will be achieved and if the guaranteed level of savings is not realized, the energy services company (ESCO) that implemented the performance contract must write a check to cover the shortfall. The guarantee accomplishes three things:

- It reduces the facility owner's risk
- It facilitates the procurement of the capital necessary to pay for the project
- It gives the ESCO impetus to ensure the system runs as efficiently as possible

Performance contracting is an attractive solution for higher education entities because of the savings guarantee, and because it provides a comprehensive method for making sure campus buildings are operated and maintained at the highest level of efficiency.



Performance contracting often saves universities 30% in energy costs

In the United Kingdom, Sheffield University saves £360,000 annually in a 10-year project that covers 38 buildings and over 120,000 square meters. The University of North Texas gained a 31% reduction in energy costs, equal to 14 million USD in savings, in a 10-year energy savings performance contract. A second contract is now underway with an expected savings of \$3.3 million annually. The Virginia Community College System saved up to 2 million USD annually with a 4 year performance contract covering 315 buildings on 40 campuses.

Conclusion

Universities face multiple challenges today, including reduced endowments, shrinking budgets, rising energy costs, aging systems and equipment, increased enrollment, and rising crime on campus. These challenges must be met while still achieving the core mission of the institution: to provide an optimal learning environment for their students.

An integrated infrastructure approach provides an energy efficient, secure campus, thus helping universities meet their most difficult challenges. Triple bottom line benefits to this approach include:

People

- Enhanced learning environment and improved student performance due to a comfortable and healthier indoor climate
- Peace of mind to parents, students, staff, faculty, and administration due to secure facilities

Profit

- Reduced OpEx—financial savings of up to 30% which can fund budget shortfalls
- Reduced CapEx—all applications run on a single network, components are co-utilized by multiple systems, and hardware, software, and cabling needs are reduced
- Protection of assets and property

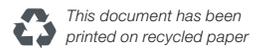
Planet

- Reduced energy use and CO₂ emissions
- Measureable demonstration of commitment to sustainability
- “Living lab” opportunities engage students in energy conservation in a meaningful, tangible way

By partnering with an expert in energy management and security in the university space, higher education leaders can create an efficient campus that enables them to focus on their core mission of education.

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