

2005

Effective & Innovative Practices Award Winners Show Imagination and Practical Solutions



PPA's Effective & Innovative Practices Award continues to solicit and highlight an ever-growing

list of wonderful programs and processes that enhance service delivery, lower costs, increase productivity, improve customer service, generate revenue, or otherwise benefit the educational institution. The five 2005 award-winning entries focused on a sustainability coordinator program, a resident facility assistant program, a biomass fuel project, a customized financial reporting model, and a water reuse initiative.

Up to five E&I submissions are eligible each year for a cash award of \$4,000, which is generously sponsored by Sodexo. Entries can describe either a new program or significant restructuring of an existing program or process for success. The Professional Affairs Committee selects the winning entries based on a point system. There were 25 entries this year from 22 schools. The five successful institutions received special recognition and a check at APPA's Educational Facilities Leadership Forum in Orlando, Florida in August.

**The deadline for the 2006
Effective & Innovative Practices
Award is February 15, 2006, midnight Greenwich
Mean Time.**

**For more information or to retrieve the award
application, please visit [www.appa.org/recognition/
effectiveandinnovativepractices.cfm](http://www.appa.org/recognition/effectiveandinnovativepractices.cfm).**



SUSTAINABILITY

The University of British Columbia Sustainability Coordinator Program

By Brigid MacAulay

Brigid MacAulay is coordinator, Sustainability Programs, at the University of British Columbia, Vancouver; she can be reached at brigid.macaulay@ubc.ca. This is her first article for Facilities Manager.

The University of British Columbia was Canada's first university to adopt a Sustainable Development Policy, which calls for us to demonstrate the way to a sustainable future. The UBC Sustainability Office developed the Sustainability Coordinator (SC) program as a way to implement this policy. In a climate of decreasing resources for and increasing demands on university staff, the SC program represents an opportunity to achieve the dual objectives of reduction in costs along with increased staff satisfaction. We have enlisted staff and faculty to help us achieve savings in energy, materials and paper use, along with promoting alternative transportation, while making the process both fun and rewarding. With a limited time commitment of two to four hours per month, during work time, SCs provide colleagues with information about the impacts of their daily activities, help individuals identify alternative behaviors, and offer tools to make tasks easier.

Since the 1999 launch of our program, the results have been remarkable. Despite a 24 percent increase in students since our 1998-99 baseline year, UBC has reduced energy use in core and ancillary buildings by 10 percent, for a savings of \$2.5 million. The SC program alone has saved the university \$75,000 annually in electricity reductions for the past three years. UBC will also meet its Kyoto Protocol targets ahead of time by reducing CO₂ emissions by 15,000 metric tons each year. In addition, paper use on campus has been decreased by 31 percent. The SC program played an important role in these reductions, partnered with our office's ECOTrek infrastructure upgrade.

In addition to cost savings in energy and materials, the program also provides significant gains for the university in

terms of building community and boosting awareness of sustainability issues. Each month the Sustainability Office holds a luncheon or an educational event for our coordinators. At these functions, like-minded people from across the campus have the chance to get to know one another. With the knowledge gained from these events, SCs return to their departments and spread the word to their coworkers. Acting as "early sustainability adopters," SCs become the catalysts for positive change in the workplace. SCs feel satisfaction knowing they are working together to save the university money in addition to learning about and working toward a more sustainable society.

The Sustainability Coordinator program at UBC is the first of its kind and is unique in the context of higher education because it involves community-based social marketing techniques to implement the university's sustainability policy. Community members are often cynical about university policies, seeing them as another piece of paper that will never actually affect them or be realized. Through this program we

Despite a 24 percent increase in students since our 1998-99 baseline year, UBC has reduced energy use in core and ancillary buildings by 10 percent, for a savings of \$2.5 million.

are able to disseminate information about the policy and enliven it by communicating ways that individuals can affect change at the university through simple everyday actions. The other important factor is the two-way communication that the program achieves. We are able to disseminate as well as collect information and ideas from the community to develop initiatives that have a great chance for success and acceptance.

Community-based social marketing draws heavily on research in social psychology. This research indicates that initiatives to promote behaviour change are often most effective when they are carried out at the community level and involve direct contact with people. Our volunteers are exceptional vehicles to get the message of sustainability out to the campus community because of their enthusiasm and their unique position as active role models and communicators in the workplace. When colleagues see first-hand how easy it is, for example, to turn off lights and monitors, use reusable cups, choose responsible commuting practices, and are personally encouraged to do so, they are much more likely to change their own behavior.

While the program depends strongly on the zeal of its volunteers, it is supported and strengthened by the efforts of the Sustainability Office. We make the job of the SCs easy by providing helpful tools on our website for their use. We feature a different theme every few months, alternating between Ener-

gy, Transportation, and Materials, and provide the SCs with a Toolkit for each theme. The Toolkits feature a number of different tools and allow the SCs to select and incorporate the most appropriate one into their units' daily activities. The tools include straightforward tasks such as sending out prewritten e-mails, posting notices or reminders provided by our office, and giving incentives for staff involvement.

This project is an excellent candidate for transferability to other institutions. The core principles of information dissemination through networks of local experts are inherently adaptable to a variety of organizational settings and subject matters. The program follows the basic principles of volunteer management: needs assessment and planning, position development and design, recruitment, screening, interviewing and matching, orientation and training, support, supervision and motivation, recognition, and evaluation.

Our Sustainability Coordinators are committed to making a difference. In 2003-04, SCs carried out more than 150 initiatives from the Toolkits as well as over 60 of their own making. We also involve SCs in the program planning process. Prior to developing tools we solicit input on operational constraints in such things as using recycled paper and printing double-sided documents. The involvement of stakeholders in the development of the program has been critical to the practicality of the measures we are asking coordinators to implement.

The SC program relies on the involvement of management as well. Managers are involved in the recruitment process, send out notices, and support the SCs in their efforts. We hold an annual luncheon inviting SCs and their managers to thank them for the work that they do and to strengthen their commitment to the program.

We survey our SCs annually to get feedback on what is working well and what areas could be improved. In a recent survey, 95 percent of SCs said they found the program enriching and would recommend it to a friend, and 72 percent said their tips and strategies were well received by their colleagues. We also seek feedback at our regular meetings. Documentation and analysis of resource savings were published in the Sustainability Office's 2004-05 Annual Report, *Progress Towards a Sustainable Campus*.

To view the report, and for information on other exciting sustainability programs and initiatives at UBC, please visit www.sustain.ubc.ca. We consider the SC program to be an effective tool in our efforts to change the culture at UBC. If you'd like assistance in setting up a similar program in your institution or organization, please contact Ruth Abramson at ruth.abramson@ubc.ca. 🏠



Resident Facility Assistant Program

By John Michalewicz

John Michalewicz is director of plant services at the University of Hartford, Hartford, Connecticut; he can be reached at michalewi@hartford.edu. This is his first article for Facilities Manager.

The Resident Facility Assistant (RFA) Program was created at the University of Hartford to enhance service response to the residential community. RFAs are live-in students who work on behalf of the facilities department to address the quality of life for the residential community. It is built from a residential, community development model with each staff member assigned stewardship to their living area. An RFA is a blend of the traditional resident assistant position that builds community by advocating for students and a particular living area, coupled with the typical student maintenance assistant who serves as a light maintenance service provider.

Institutional Benefits and Results

The main focus in the creation of the RFA program was to improve the department's overall customer service without significant additional costs. This was achieved through a conversion of the RA staff as compensation for both is identical (room and board). The staff of 15 comprises energetic, responsible student leaders who enjoy getting their hands dirty. They provide service through 1) staffing of the departmental service response area, 2) response to after-hours activity while on duty, 3) group response to facility related crises, 4) minor maintenance issues and projects, and 5) campuswide inspection/data collection programs.

RFAs know their residents and have a working knowledge of their building, its systems and its problems. For two weeks prior to the start of an academic year, they are trained on university and departmental standards, components of customer service, and safety/hazardous material handling. To complement their training as customer service representatives for the department, RFAs receive training during the year by trade staff members from carpentry shop, electrical shop, lock shop, plumbing shop, paint shop, custodial department, grounds department, and utility services. This training has enabled

RFA's also conduct routine inspections. They serve as a set of trained eyes and ears in each of the residence halls.

them to provide self-help tips and real time advice to call-in customers, as well as direct service to problems, significantly reducing response time.

Two RFAs are on duty 24 hours a day, 7 days a week and available for immediate response to campus-wide problems. This system has enabled our department to have a trained staff member on the scene of any reported problem within minutes at any time of day or any day of the week. Changing light bulbs, unclogging toilets/sinks/showers, resetting circuit breakers, water cleanups, snow removal, and minor carpentry repairs are examples of this type of service.

The RFA program has also created a direct connection between the facilities department and its customers. Prior to the RFA staff, problems or work needs in the residence halls were reported to facilities exclusively via residential life staff members. This often resulted in delays up to two to three days between the time a problem was reported by a customer until received by the facilities department. At that point, the problem was often misreported as it was then second-hand information. With 80 percent of all work requests centered in the residence halls, delays and communication problems severely impacted our ability to be responsive. Today, problems are reported and, in most cases, corrected the same day.

RFA's also conduct routine inspections. They serve as a set of trained eyes and ears in each of the residence halls. They complete weekly inspections of their assigned building and repair all issues within their capabilities (i.e., hallway lights bulbs) while reporting others to the appropriate trade (i.e., replace ballast). The RFAs have recently branched out to provide a similar service to the academic and administration buildings. Prior to this program, problems in these areas were only reported by customers or other de-

partment's staff members. This inspection process allows for maintenance or repair, in many cases, before residents/customers are aware the problems even existed.

Portability

The RFA program concept is easily adaptable to any institution that currently relies on student leadership to assist with programs across campus. It is a common practice on many campuses to have RAs liaison with students to address residential problems. RFA programs simply concentrate attention on facility related issues in resident areas (or any other area



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they may be assigned to). These student leaders quickly gain experience and develop relationships through daily involvement with issues similar to those faced by trade staff members. It is often easier for a student to penetrate the barriers that separate students and staff. RFAs have directly confronted other students regarding accountability for damage and poor conduct.

It is typical that RA positions hold some responsibilities for facility issues in resident areas. When these responsibilities are removed and a percentage of existing RA positions are

refocused on facility issues, RFA positions can be created without reducing staff to student ratios.

Management Commitment

Since the program has been running, departmental management and institutional leadership have made major commitments. In this span, over \$350,000 has been reallocated to provide RFA compensation (room and board), supplies, training, and staff development activities. One new full-time position has also been created to manage all aspects of the RFA program. The student affairs staff, while initially concerned with reduction in RA positions, has supported the

concept and continues to view the RFA program as a positive service enhancement to students. The RFAs have become a part of the fabric of the department and the institution.

Benchmarking

While the results of our annual survey are pending, feedback is regularly received on the work of the RFAs. Even to our surprise, complimentary feedback of the success of the program and the RFAs themselves has been received from various deans and other high-level administrators. The frequent problems which fueled the creation of RFA have disappeared. Complaints outside the facility department have also disappeared.

Service response benchmarks have also changed. For example; completion of light bulb replacements in the residence halls have gone from an average of 3 days to "within 24 hours;" emergency response for plumbing problems has gone from 90 minutes to 10 minutes; incidental damage from water overflows has been reduced by 70 percent; and graffiti vandalism in resident areas where RFAs reside has been reduced by 90 percent.

What cannot be measured is the impact of having RFAs living among other students; the incidents that no longer happen because of peer pressure, nor the impact of regular inspections by a student staff that knows what they are looking for and understands the importance of the accuracy of their work. 🏠



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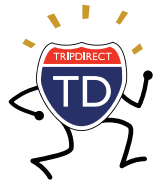
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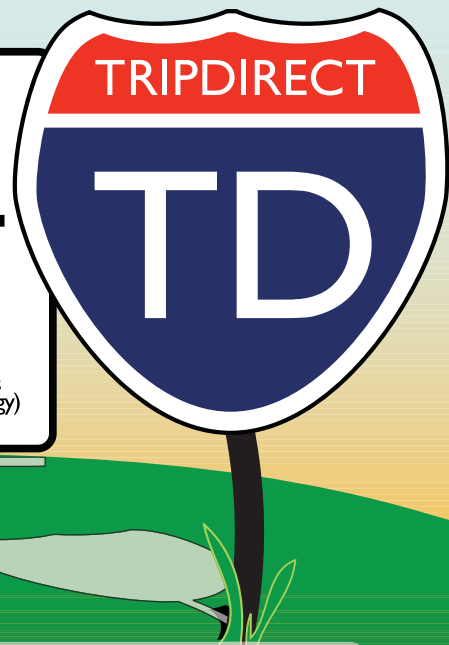
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The University of Iowa Biomass Fuel Project

By P. Ferman Milster and Jeri Ripley King

Ferman Milster is associate director of utilities and energy management at the University of Iowa, Iowa City. He can be reached at ferman-milster@uiowa.edu; this is his first article for Facilities Manager. Jeri King is assistant to the associate vice president for facilities management at the University of Iowa; she can be reached at jeri.king@uiowa.edu.

Using biomass fuel in its circulating fluidized bed (CFB) boiler, the University of Iowa (UI) Power Plant pioneered a new green energy source that saves hundreds of thousands of dollars in fuel costs annually, and utilizes a renewable waste product.

When the Quaker Oats Company, located approximately 20 miles from the University of Iowa, approached the UI Power Plant about bioenergy, it was searching for a market for Resifil, a processed oat hull product it had produced for 80 years. The UI Power Plant was willing to test the product in its circulating fluidized bed boiler. After the test yielded intriguing, but mixed results, the UI-Quaker team decided to try using the unprocessed oat hulls. The feather-weight oat hulls required special materials handling solutions, boiler control system modifications, and new procedures to make this fuel work as a viable long-term source of energy for UI.

The successful effort by the university-industry partnership captured the attention of peer institutions across the country, garnered two awards from Iowa's governor, is applauded by sustainability advocates, and is recognized as a dramatic example of how higher education facilities management can play a key role in enhancing efforts to generate economic development.

Institutional Benefits

The Biomass Fuel Project has been an exciting opportunity for the University of Iowa to partner with a local industry, reduce fuel costs, reduce greenhouse gas emissions, and utilize a renewable waste product as a resource for Iowa.

The institution is realizing an annual cost saving of a half-million dollars through the use of oat hulls in place of 25,000

to 35,000 tons of coal. An oat hull is the outer shell of an oat grain that remains after the soft, protein containing core has been removed by milling the grain. Adding oat hulls to the fuel mix significantly reduces the amount of regulated air pollutants.

In 2004, the projected reduction in green house gas emissions enabled the University of Iowa to join the Chicago Climate Exchange, a green house gas trading pilot program for emission sources and offset projects.

The UI Power Plant's partnership with the Quaker Oats Company helps to keep Quaker's 1200-employee production operation in Cedar Rapids competitive, while also providing a use for a renewable energy source product. Additionally, the State of Iowa recognized the university with two 2003 Iowa Environmental Excellence Awards: "Special Recognition in Air Quality" and "Special Recognition in Energy Efficiency/Renewable Energy." This biomass fuel project provides learning opportunities for the university's students and faculty.

Innovation and Creativity

Most of the technical experience was in Europe, where bioenergy has been utilized for decades; however, specific information related to burning oat hulls in a CFB furnace was not readily accessible.

After coordinating with the Iowa Department of Natural Resources for a biomass test burn, the experiment proceeded with an initial test of Resifil. Mixed results led the team to try burning unprocessed oat hulls. Oat hulls, about the size of sunflower seeds, are very light-weight. Quaker Oats had to figure out how to load and transport the oat hulls. The Power Plant had to design, procure, and install a pneumatic injection system. Part of this system included a separate, more compatible fuel silo, and designing, procuring and installing pneumatic blowers, fuel injection nozzles, transport piping and fittings, safety interlocks, and new boiler control logic specifically designed for the biomass fuel. These modifications needed to be done in a manner that would not have a negative impact on the existing coal systems.

The test with unprocessed oat hulls proved a resounding success for the University of Iowa Power Plant, and for Quaker Oats.

Portability and Sustainability

Learning from the success of this project, the UI Power Plant team recognized several key factors necessary for a successful biomass fuel project:

- Proximity to the source of biomass supply;
- Reasonable transportation costs from the supply;
- An adequate supply of biomass;
- A mutual desire between the supplier and the university to make this successful;
- A circulating fluidized bed boiler.

The Biomass Fuel Project has been an exciting opportunity for the University of Iowa to partner with a local industry, reduce fuel costs, reduce greenhouse gas emissions, and utilize a renewable waste product as a resource for Iowa.

Management Commitment and Employee Involvement

From inception through testing and into full production, a team of power plant employees worked on the biomass fuel project. People selected for the team were motivated, creative, long-term employees of the plant. Each of them could be described as a "self starter." There was not a formal team charter, just a strong desire to prove the concept and drive to success. Their mission was clear: "Make biomass burning at the Power Plant a reality."

In addition, it is necessary to recognize the role that university administration must play. The leadership must be willing to try an innovative practice, willing to accept the time necessary for permitting and testing, and accepting of the initial costs for investments in materials handling systems and boiler modifications that, if successful, will be recouped in later savings.

Documentation

After the mixed success of the first test with Resifil, testing proceeded with oat hulls. Because the preliminary emission performance results were so promising, it was decided to raise the combustion rates to 80 percent by Btu basis, or 10.5 tons per hour of biomass fuel. This biomass burn rate greatly exceeded initial projections.

During the eight-month test period, 16,077 tons of oat hulls were consumed, displacing 8,065 tons of coal. The expected consumption rate for Boiler #11 is around 35,000 tons per year, displacing 23,000 tons of coal. Besides the substantial reductions of regulated air pollutants, green house gas emissions are expected to save 55,000 tons CO₂ per year. The oat hulls represent over 30 percent of the solid fuel energy input to Boiler #11, and about 14 percent of the total fuel purchased for the university.

Conclusion

The University of Iowa Power Plant has embraced the economic and environmental advantages of burning biomass fuel.

	SO ₂ (lb/mmBtu)	NO _x (lb/mmBtu)	PM (lb/hr)	CO (lb/mmBtu)	VOC (lb/hr)
Permit limit	1.0	0.40	6.69	0.30	N/A
National average	0.83	0.40	N/A	N/A	N/A
100% Coal	0.21	0.22	2.51	0.06	0.33
50% oat hulls	0.13	0.18	1.57	0.03	0.11
80% oat hulls	.08	0.10	1.32	0.02	0.10
% Decrease	62%	18%	47%	67%	46%

From a business perspective, this project was and is an economic "win-win-win" situation. It helps the university, Quaker Oats, and the State of Iowa. Combining creative engineering and operating floor know-how, a team of experienced power plant staff partnered with an industry leader to pioneer a cutting edge, sustainable technology.

Providing an economic and reliable outlet for oat hulls helps to ensure the Quaker Oats Cedar Rapids Facility remains competitive and viable. The UI purchases oat hulls at a cost of about half that for an equivalent amount energy from coal. This represents a significant reduction in purchased energy cost for the University of Iowa. Finally, reducing greenhouse gas emissions and regulated pollutants, as a result of burning biomass, produces an environmental benefit that is greatly appreciated and lauded by the UI community. 🏰

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How the University of Miami's Facilities Administration Department Uses Customized Financial Reports to Manage Costs

By Leonard Nash

Leonard Nash is a freelance writing and editing consultant based in Hollywood, Florida. He can be reached at ldn@leonardnash.com.

To systematically measure and manage expenses, the University of Miami's Facilities Administration Department has developed a system of clear, comprehensive, adaptable cost reports that present detailed budgetary information to facilities administrators, maintenance managers, deans, and other university officials. These spreadsheet reports provide users the knowledge they need to develop informed budgetary decisions. These reports have helped curb operations and maintenance cost increases to an average of 2.3 percent per year (not including insurance increases) over the past ten years. In light of our unique arrangement with the university's administration that allows us to reinvest cost savings, our computerized data reports encourage awareness, conservation, innovation, and constant reinvestment in our facilities.

Institutional Benefits

When university financial officers ask, "Where is the money going?," they require prompt, specific, accurate answers. Previously, we could not summarize our 78 building accounts and 14 operating accounts into primary facilities functions such as Physical Plant, Environmental Services, and Utilities, each guided by a different manager. Motivated by our reinvestment initiative, we developed this innovative data reporting system. Our customized financial reports offer current, cumulative breakdowns of every penny we spend and receive. Computerized data allows us to produce reports, graphs, and other presentations on request.

The power and efficiency of our system has led to numerous documented efficiency measures. For example, when Residence Hall reports revealed that labor costs were increasing dramatically, our analysis determined that overtime costs for summer maintenance was largely to blame. We responded with a continuous improvement project that reduced overtime from 683 hours in 1999 to 60 hours in 2004—with

improved service levels! This overtime reduction helps save \$390,000 annually. And that's just one of many operational changes that have resulted in ongoing cost savings, documented improvements in customer satisfaction, and acclaimed reinvestments into the university's physical assets.

Innovation and Creativity

To create meaningful financial reports, we split the buildings by manager and by the main components within each area. There are three primary zones: Academic Zones 1 and 2 include classrooms, laboratories, and administrative offices; and Zone 3 includes landscaping, exterior lighting, fountains, lakes, and other exterior features.

Four reports are generated monthly: Actual Expenditures for the Current Month, Actual Expenditures to Date, Budget to Date, and Budget Less Actual to Date. Under each heading, we present three cost categories: Utilities, Environmental Services (including housekeeping, landscaping maintenance, and waste disposal), and Physical Plant Maintenance.

Cost per square foot for each building is included so buildings can be compared with each other and benchmarked against IREM and other business entities. Using this data, maintenance managers regularly identify anomalies and investigate hidden problems such as plumbing and electrical malfunctions, thus avoiding wasted resources, hazardous conditions, and damage to facilities. Because most costs are not expended evenly throughout the fiscal year, we rely upon the seasonalized budget, which compares the monthly and cumulative percentage of the annual budget spent in a particular month to previous years. This allows us to modify discretionary spending, thereby ensuring that essential funding is available year-round.

Portability and Sustainability

Our comprehensive reports, created with ordinary spreadsheet software, allow for ongoing sustainability and are adaptable to any facilities department, regardless of size or departmental structure. Using a common report request utility program, our finance director downloads costs from the university's general ledger. The final month of the fiscal year becomes the report for the year-end closing. The same report structure is used each cycle; therefore, beginning a new fiscal year is similar to beginning a new month. Reports must balance exactly to the institution's general ledger because they are used as the basis for year-end reports transmitted to the controller's office, the Budget office, and the Board of Trustees Master Planning and Construction Committee.

Our overhead report splits the 14 overhead accounts into direct and support expenses and overhead recovery. Expenses are divided into categories: Supplies, Equipment, Vehicle Costs, Outside Services, etc. By comparing these expenses with the overhead recovery in each account, we know whether we are staying on budget and whether overhead recovery is sufficient.

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Facilities officers at the University of Miami rely upon these monthly and annual reports to make operating decisions and to determine the effectiveness of mid-level managers regarding budget and asset management.

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In 1997 we presented our reports to the SRAPPA conference. More recently, Residence Halls administrators have reviewed the reports with their counterparts within the Atlantic Coast Conference and throughout Florida.

Management Commitment and Employee Involvement

Inspired by our mission statement, "Provide the best facilities for students, staff, and faculty; operated and maintained at the least cost per square foot," our managers use our unique reporting system to review costs within ever-tightening budgets. Having reviewed the monthly reports, our facilities managers meet with their supervisors to discuss ongoing operations and to consider new projects within realistic budget projections.

Facilities managers receive each other's zone-specific reports because shared data encourages facilities managers to communicate, cooperate, and innovate. For example, our di-

rector of environmental services reviews seasonal trash hauling expenses for each zone and works with facilities managers on cost-saving measures.

Reports are produced once the university closes its books each month and are printed and distributed immediately. Our finance director also creates summary reports for the associate vice president of facilities administration and the physical plant director—and presents them along with comprehensive, full-length spreadsheets. Reliable, insightful data in the hands of dedicated professionals remains a key factor in our ongoing success.

Documentation, Analysis, Customer Input, and Benchmarking

Facilities officers at the University of Miami rely upon these monthly and annual reports to make operating decisions and to determine the effectiveness of mid-level managers regarding budget and asset management. Our accumulated,

comprehensive data also forms the basis for other benchmarking tools. For example, a graph that itemizes cumulative expenses reveals that our total costs (excluding insurance) have increased only 2.3 percent per year over the past ten years.

Residence Halls (with 33 building accounts) and South Campus (with 9 building accounts) use the reports to track their monthly expenses, to estimate year-end savings (which can be used for renovation projects), and to plan for the next fiscal year. The reports engender confidence that our department is maximizing the value of customer funds while maintaining buildings at levels that meet and exceed expectations.

Fifteen years into this ongoing program, we have not benchmarked our data reporting system against other colleges and universities because we know of no other learning institution pursuing such an endeavor. As cost increases continue to outpace budget increases, these reports become even more critical to our successful management and enhancement of facilities here at the University of Miami. 🏰

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University of Victoria

The University of Victoria Water Reuse Initiative

By Sarah Webb

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The University of Victoria is one of Canada's leading universities; it provides both students and faculty with a unique learning and teaching environment and has earned a reputation for commitment to research, scholarship, and co-op education. Located on picturesque Vancouver Island, UVic is home to more than 18,000 students and 4,000 staff.

In order to protect the unique campus environment, the 2003 Campus Plan was created to guide the long-term vision for physical growth and solidify the university's commitment to environmental leadership. The Campus Plan is based on themes of low impact development, environmental stewardship, and integrated building design.

UVic was a recipient of the 2005 APPA E&I Practices Award for designing and implementing a leading-edge waste water recycling project that saves the Capital Region Water Commission over two million litres of potable water annually.

It was during the planning phases of the UVic Medical Sciences building when staff in the department of facilities management recognized an opportunity to preserve natural resources and reduce the demand on infrastructure by recycling waste water from a nearby marine research lab on campus.

Since this was the first large-scale water recycling initiative in the region, the project required a coordinated approach with broad stakeholder involvement and an emphasis on safety, efficiency, and sustainability.

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"When we first raised the idea of recycling waste water, it was met with skepticism," says Gerald Robson, executive director of facilities management at UVic. "After two years of planning, design, and approvals, we are pleased to see the system up and running."

Approval authorities for the project included the local municipality, the regional water commission, the Ministry of Health, and the Ministry of Environment (formerly Water, Land, and Air Protection). Facilities management and its consultant, Hirschfield Williams Timmins Ltd, were able to design a system to treat the waste water coming from the outdoor aquatic unit, a research laboratory that focuses on fresh water and marine fisheries, using a combination of filters, ozone, and chlorine.

The treated water is pumped through a series of holding systems and circulated through toilets and urinals in the Med-

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This project conserves one of the most important natural resources: drinking water.

ical Sciences Building, requiring no potable water to be used for flushing.

For the university, involving in-house staff in the project was critical. Mechanical, electrical, and plumbing staff helped to design the system to complement the existing campus automation and emergency power systems.

"Getting staff involved from the very beginning was a part of our success," says Robson. "Our employees were keen to identify challenges and offer solutions."

Regular quality control sampling ensures the treated water meets provincial regulations for sanitary sewage discharges. And, in case of an emergency situation, automated controls have been put in place to shut off the waste water and protect city water sources.

The Water Reuse Initiative offers numerous benefits to both the university and the community. For the university, the project provided the basis for three points in the LEED Green Building Rating System for the Medical Sciences Building. The

water recycling project resulted in a 69.67 percent reduction of total water use in the building, and a 100 percent reduction of potable water demand for sewage conveyance use.

To date, hundreds of students, faculty, staff, and community members have toured Medical Sciences to learn about green buildings and low-impact design. And while the stunning architecture, innovative landscaping, and locally made materials are interesting, the water recycling system continues to be the highlight of the tour. "It isn't often when one of the biggest draws into a building is a toilet!" jokes Robson.

With no additional water entering the sanitary sewer, the initiative reduced the need to expand costly sewage infrastructure.

Tracy Corbett, director of campus planning and sustainability couldn't be more happy: "Any effort to reduce costs associated with operations and maintenance through resource conservation means more money available to pursue our core mission: academic and research excellence."

But perhaps the biggest benefactor of the Water Reuse Initiative is the environment.

This project conserves one of the most important natural resources: drinking water. Despite the seeming abundance of water, potable water can often be in short supply. Affected by drought, contamination, and pollution, sources of clean and safe drinking water in urban areas can be threatened. With anticipated popula-

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tion growth in the Greater Victoria region, conserving potable water is critical.

So what is the next step in the Water Reuse Initiative?

UVic has committed to expand the water recycling initiative to the engineering computer science building currently under construction. The engineering building will be the second LEED building on campus and is expected to be completed by January 2006.

Using the same technology, the university will save the city an additional 2,716,411 litres of potable water per year. In addition, the system will harness energy from the water recycling to supplement heating requirements for the building. A water-to-water heat pump in the system will save an estimated 350,000 kWh per year.

Robson notes that "the dual benefit of water and energy savings truly demonstrates a whole systems approach to green buildings."

The University of Victoria, in anticipation of future water recycling projects, has already installed dual plumbing systems into the continuing studies Building and 294-bed residence and has committed repeating the technology in all new buildings and facilities. UVic is also continuing to explore how to further use waste water on campus for other operations such as drip irrigation.

Looking back to what was a seemingly impossible project; the University of Victoria has demonstrated that creativity, cooperation and dedication can bring a concept into reality. The Water Reuse Initiative not only exemplifies innovative building design but it also conserves natural resources and acts as a teaching tool for the campus and surrounding community. 🏰

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