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& Service

Highlight the  
*2010* Effective &  
Innovative  
Practices *Award Winners*

**APPA's Effective & Innovative Practices Award** continues to highlight the best of the most creative and practical programs and processes that enhance and transform service delivery, lower costs, increase productivity, improve customer service, generate revenue, or otherwise benefit an educational institution. The five 2010 award-winning programs featured here focus on student design teams; building services sustainability; fast-acting energy improvement teams; recycling; and a reengineered maintenance parts and materials process.

Up to five Effective & Innovative Practices Award submissions are eligible each year for a cash award of \$4,000, generously sponsored since the award's inception by Sodexo Campus Services. Entries are judged by APPA's Professional Affairs Committee and are based on: 1) institutional benefit; 2) innovation and creativity;

3) portability and sustainability; 4) management commitment and employee involvement; and 5) documentation, analysis, customer input, and benchmarking.

The five successful schools this year received special recognition and a check at the APPA 2010 conference in Boston. The presenters were APPA President Polly Pinney, Professional Affairs Committee rep Jodie Sweat, and Sodexo's Tom Loony.

The 2011 Effective & Innovative Practices Award is open, and the deadline for completed applications is January 31, 2011. Winning institutions will receive recognition at the APPA 2011 conference next July 16-18 in Atlanta, Georgia.

To learn more about the E&I Practices Award: <http://www.appa.org/recognition/effectiveandinnovativepractices.cfm>

To view past E&I recipients: <http://www.appa.org/recognition/innovativewinners.cfm>



## California State University Northridge

### California State University, Northridge

#### STUDENT DESIGN TEAM PROGRAM

#### Recent Example – The CSUN Subtropical Rain Forest Team

BY BRUCE WEINSTEIN

*Bruce Weinstein is the director, logistical services, for physical plant management at California State University, Northridge. He can be reached at [bruce.weinstein@csun.edu](mailto:bruce.weinstein@csun.edu). This is his first article for Facilities Manager.*

California State University, Northridge and its Physical Plant Management Department continue to lead the way with innovative endeavors, demonstrating its commitment to conservation, sustainability, and ongoing support of the university mission and values. In response to those endeavors Physical Plant Management's Student Design Team Program, which has been in effect for more than ten years and has been continuously refined to establish a

repeatable and highly successful program, remains unmatched by other institutions in its ability to achieve optimal student involvement in major facilities projects and initiatives. The program has been developed to such a degree that new and innovative projects, which conventional means of implementation would hinder or risk failure, can be implemented with assurance.

The CSUN Subtropical Rain Forest is one recent yet extraordinary example of this program. A particular CSUN academic core value that is also inherently part of the Student Design Team Program is the "Encouragement of Innovation, Experimentation, and Creativity." The team was encouraged to take intellectual and creative liberties in the development of this unique project.

As one of the largest departments in CSUN, PPM supports the university mission by ensuring a functional and safe campus environment where students can thrive. Many CSUN students are afforded "real world" occupational experience as student employees in administrative services, payroll, work order processing, construction management and engineering services within the PPM workforce. Through the years, PPM has established itself

as a model organization that utilizes and benefits from collaborative teamwork, to include the use of CSUN student employees as an important resource. Over the last several years, PPM has continued with this team philosophy by completing a number of notable projects to minimize the university's impact on the environment, to make our campus environment more sustainable,





and to help CSUN become more energy independent.

Consistent with this environmental consciousness and team-work philosophy, PPM staff, Biology staff, CECS faculty and CSUN students developed and created a one-of-a-kind, **sub-tropical rain forest**. This was a “first of its kind” project that challenged the team to utilize “outside the box” concepts and modern technology in a way that has never been done before. The CSUN rain forest is a superb example of the seamless integration of technology and the environment, and it was brought to fruition by the subtropical rain forest team.

Subsequently a fuel cell power and chiller plant was installed on campus at what is now known as the satellite central plant, creating an exciting opportunity to recover and utilize all of the waste byproducts of the Combined Heat & Power (CHP). Waste heat collected from the campus classrooms and labs would ultimately be circulated through cooling towers, and the CO2 exhaust stream and effluent waste water from the fuel cell could be used to create a perfect environment to support a subtropical rain forest and minimize our industrial impact on the environment. The project provided a unique and cost-effective approach to sustainability and the most sustainable fuel cell CHP and chiller plant possible. The 15,000-square-foot subtropical rain forest has more than 3,500 plants of over 100 species and uses the waste streams

from the satellite central plant in a positive environmental way.

PPM staff and the student design team joined to form a construction team that was organized in such a way as to utilize the best practices of construction management at risk and design build project management methods. With PPM acting as the design build construction manager (CM at risk), there were extraordinary opportunities for collaboration. Such approaches have been developed to a science at CSUN allowing optimal opportunity for our faculty and student body to collaborate on major initiatives, gain invaluable experience, and contribute to innovative design and real-life implementation of those same concepts. The project started in May 2007, and the Subtropical Rain Forest and satellite central plant were completed in April 2009.

This is a “one of a kind” project that has no equal anywhere else in the world. Since the initiation of the subtropical rain forest we have had visitors and dignitaries from around the globe who all proclaim this achievement as extraordinary. The project could not have been achieved without the team effort of CSUN students, faculty, staff, and industry partners, which this Student Design Team Program brings together.

Currently the campus is installing the first (in the world) grid connected 100kW high efficiency triple junction photovoltaic power system in collaboration with Boeing, the U.S. Department of Energy, and other industry

partners. This collaboration also has Student Design Team aspects underway that support this new and unique development and partnership.

Through the continuing work of the Physical Plant Management Student Design Team, we make a commitment to promote educational opportunity, inclusion, and excellence through collaboration, innovation, and active learning in a manner that is beneficial to the students, staff, faculty, and university. These extraordinary projects will continue to serve the university for years to come through their contribution to minimize the university’s impact on the environment, to make our campus environment more sustainable, and to help CSUN become more energy independent. The students will graduate with the accomplishment of having played an active role in changing the landscape of their university and with the experience and confidence that they are equal to the many challenges that await them.

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University of South Florida  
Tampa, Florida



# PURDUE UNIVERSITY

## Purdue University

### BUILDING SERVICES SUSTAINABILITY PROGRAM

BY GAIL RIESE

*Gail Riese is communications manager for Purdue University Physical Facilities, West Lafayette, IN. She can be reached at gariese@purdue.edu. This is her first article for Facilities Manager.*

**P**urdue University's Building Services staff has earned APPA's Effective & Innovative Practices Award for its sustainability program. The department created a comprehensive sustainability plan incorporating an environmentally friendly green cleaning program with an innovative, campus-wide recycling program.

#### GREEN CLEANING PROGRAM

Purdue's Green Cleaning Program incorporates environmentally friendly cleaning, floor and carpet care, and consumable supplies. Program implementation began in the fall of 2008 and was completed in summer 2009 with specific aims to reduce solid waste and water pollution, and improve air quality through the elimination of volatile organic compounds. Many cleaning chemicals are specifically selected to biodegrade in the open environment within 30 days.

"We investigate the entire life cycle of a product to determine how its manufacture, use, transport, and possible reuse impact the environment, positively or negatively," states Bob Morman, building services day general manager. "We use products made from easily renewable agricultural and forestry products. In doing so, we help not only ourselves but also American industry. Our green products are all third-party certified, and they meet tough environmental standards that meet or exceed federal guidelines."

The reduction of caustic chemicals has also resulted in fewer workers' compensation claims related to inhalation of fumes, allergic reactions, and splash/splatter accidents. A strong emphasis on safe and healthy cleaning has also helped to build up the morale of the Building Services staff.

"Our custodians see themselves as stewards of the facilities

they clean, protect, and maintain," says Terry Ashlock, director of building services. "They recognize the importance of their role in quality of life issues that affect the entire staff, faculty, and student community."

Dramatic results have been realized since the Green Cleaning Program was implemented. The number of cleaning chemicals (i.e., multi-surface cleaners, floor finishes, carpet cleaners) has been reduced by 70 percent. Effluent waste water contaminants have been eliminated (i.e., disinfectants, corrosives, heavy metals, phosphates) as well as the number of air pollutants (respiratory hazards and aerosols).

#### RECYCLING PROGRAM

In July 2009, Purdue launched a comprehensive plan to boost the campus recycling rate and initiated a new, key component of the plan – desk-side recycling. This unusual concept significantly increased campus participation by making recycling easy and convenient.

Trash receptacles were removed and replaced with recycling bins at each worker's desk. Customers are now asked to walk to centralized areas to deposit trash. Additional recycling containers are also provided in every public space and transit corridor, every classroom, and break area. Office paper is separated while all other recyclable materials are deposited together.

"Our customers no longer need to think about what types of recyclable items go into which containers. They simply comingle all recyclables," says Ashlock. "Our focus is to maximize as many recyclables as we can, not the profitability of this action."

All levels of the university have embraced this recycling effort.

Building services staff act as ambassadors for sustainability by enthusiastically discussing the program with staff and faculty and student-led organizations are carrying the program to higher levels of success each semester.

#### SHARED SUCCESS

Purdue's sustainability program is attracting attention from other universities. "Our Big Ten peers are expressing tremendous interest in what we're doing," says Morman. "Many of them plan to adopt key components of our sustainability programs for their campuses. Going forward we plan to continue supporting our friends and peers with their efforts to go green, and in the process, multiply the impact of our efforts across the country."

Three features make Purdue's sustainability program appealing to universities seeking similar results. First, during a period





of state budget cuts and financial pressures, the green cleaning and recycling programs deliver sustainable, measurable progress across the spectrum without increased staffing or funding. The cost savings are true, long-term savings that continue to increase and accumulate in proportion to the amount of effort and commitment behind their implementation.

Second, the program's modular design means schools can select from a buffet of program elements suited to their specific budgetary and operating circumstances. The design, operating results, and the individual elements of this program are readily transferrable.

And third, Purdue's willingness to share their experience reduces the lead time for other schools to realize tangible benefits. Purdue's research, testing, and development of chemicals, tools, and equipment identify a core of third-party certified vendors and manufacturers ready to assist any school looking to mirror the sustainability program.



## University of Iowa

### ENERGY HAWKS PROCESS

BY WENDY MOOREHEAD

*Wendy Moorehead is the communications manager for facilities management at the University of Iowa, Iowa City. She can be reached at wendymoorehead@uiowa.edu. This is her first article for Facilities Manager.*

To help offset state de-appropriations of historic magnitude in FY2009, the University of Iowa (UI) began looking for additional ways to improve energy efficiency and save utilities costs. Facilities Management (FM) determined it could accelerate energy-savings by assembling a team to streamline processes and develop new methodologies for identifying and correcting operational inconsistencies, equipment deficiencies, and system imbalances.

The Energy Hawks, named for the Iowa Hawkeyes, took flight in July 2009 to further reduce energy costs in 60 buildings. In short order, this quick-hit, high-impact team completed approximately 300 improvements in eight buildings, triggering noticeable changes

in energy efficiency, building function, and occupant comfort.

Each year, the Energy Hawks program is expected to discover an additional \$1 million in savings. As this team migrates from building to building with a keen eye toward reducing energy waste, the Energy Hawks give new meaning to the phrase "Watching like a Hawk!"

### THE ENERGY HAWKS TEAM

Saving energy and reducing utilities costs while improving occupant comfort is the goal of the Energy Hawks. The team consists of specialists drawn from various Facilities Management units and includes energy engineers, building controls technicians, maintenance personnel, and operations engineers. Team members are selected for a specific building based on their knowledge of the building systems. They work on solutions ranging from tuning, calibrating, and adjusting controlling devices to projects with longer-term paybacks like replacing dampers and louvers. To maximize efforts, the team searches out opportunities where a concentrated minimal investment will produce a major return.

### INGREDIENTS OF SUCCESS

#### Holistic Approach

Team members begin by looking at the building as a whole. They scrutinize energy data — chilled water usage, air flow, average temperatures— before visiting the building. By concentrating on the relationship between components, team members can uncover problems and finetune building systems to keep them functioning at a 90 to 100 percent efficiency level.

#### Cross-Organizational and Cross-Functional Team

The Energy Hawks employ a cross-organizational and cross-functional method that facilitates collaboration across Facilities Management departments. Historically, utilities departments manage the systems leading up to the envelope of the building, and building maintenance departments manage the building systems, which can result in goals that are out of sync. The Energy Hawks promote working collaboratively to optimize systems.



## Evolved Practices

In the past, core issues could go unresolved because there were not enough resources or time to commit to the process. Dedicating a full-time team to this challenge reveals opportunities for better systems management solutions. The Energy Hawks understand that they are creating measurable value by going beyond asking routine operational questions to the more comprehensive evaluation of “is it performing optimally?”

## STEPS IN THE PROCESS

1. **Determine priority of buildings** based on past energy usage on a per-square-foot basis comparing similar occupancy and usage.
2. **Review building systems** including drawings and testing and balancing reports and assign team members based on skill sets.
3. **Conduct a walkthrough** of the entire building and all the systems with area maintenance personnel to gain a better understanding of the issues.
4. **Make a detailed list of findings and prioritize** based on short-term, intermediate, and long-term projects.
5. **Work as a team** and refer issues of greater expense or magnitude to a steering group .
6. **Communicate with each other and occupants** throughout the process

## ENERGY HAWKS SUPPORT

The University of Iowa has a strengthened emphasis on sustainability, led by President Sally Mason. She has publicly commended energy savings already in progress and has challenged us to do more. As further indication of support, the UI invested \$1M in the Energy Hawks during a time when most budgets were being reduced.

Other sources of financial support include reinvesting utilities savings from previous years, leveraging deferred maintenance and recurring maintenance funds and incentives offered through local utility rebate programs.

A steering committee meets weekly to plan the sequence of buildings to be inspected and to discuss more complex or expensive issues. The Energy Hawks also work with Building Coordinators and FM area managers to ensure collaboration and continued best practices.

Employee commitment is a major component of the success of the

Energy Hawks. FM staff members know the work they are doing helps save energy dollars and improve occupant comfort.

## ENERGY HAWKS RESULTS

While some of the work will result in long-term paybacks, there are already a number of favorable outcomes.

In Trowbridge Hall, energy engineers have estimated annual savings of nearly 13.7 percent in electricity, 3 percent in chilled water, and 5 percent in steam. The Energy Hawks also documented 60 energy-efficiency fixes at the Nursing Building. In the Lindquist Center, the Energy Hawks discovered that exhaust fans were not cycling off on schedule. With adjustments to the exhaust fan scheduling and other finetuning, the systems in the building are now working in synchronization to create a comfortable environment with improved efficiency.

Tina Hass, assistant to the Dean, College of Education, sums up the process: “The experience with the Energy Hawks has been seamless and painless. They came in (Lindquist Center) and got to work with no disruption to the building occupants. Faculty and staff have commented on how much more comfortable their offices are and we have noticed a difference in energy efficiency and comfort levels throughout the building.”

The ongoing analysis of data and customer feedback will help

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Facilities Management document best practices and train the next generation not only to recognize and treat the symptoms of energy inefficiency, but also to repair the root cause.



## University of North Carolina-Charlotte

### TAKE IT OR LEAVE IT TOUR

BY KATHY BOUTIN-PASTERZ

*Kathy Boutin-Pasterz is the recycling coordinator at the University of North Carolina-Charlotte. She can be reached at kboutin@unc.edu; this is her first article for Facilities Manager.*

The *Take It or Leave It* program at UNC Charlotte is very simple: a staff member of the Office of Waste Reduction & Recycling gives away unwanted but useful items from the back of an electric cart to anyone on campus. Staff and students can take anything they want and are asked to bring their useful but unwanted items and leave it for others to take. A member of the recycling team will go on “tour” giving away and collecting unwanted items (that might end up as trash) while promoting recycling and waste reduction.

#### ABOUT THE UNIVERSITY

UNC Charlotte is North Carolina’s urban research institution with approximately 24,700 students, including 5,300 graduate students, and supported by 2,600 faculty and staff. The 1,000-acre campus is the fourth largest of the 16 institutions within the UNC system. The 11-member recycling team services over 1,300 bins throughout the academic, administrative, and facilities management buildings, covering 4.5 million square feet of interior space each day.

#### PROGRAM BACKGROUND

The *Take It or Leave It* program grew out of the popular *FREE STUFF* table that is used by the Office of Waste Reduction & Recycling during UNC

Charlotte’s Welcome Week and America Recycles Day. Students eagerly take the gently used notebooks, file folders, page protectors, and binders that the recycling crew collects during its recycling routes on campus. Without space for a reuse store at UNC Charlotte, the *Take It or Leave It* Tour becomes a mobile reuse center. We initiated the *Leave It* component at the 2005 America Recycles Day event. We invited students to bring items to the table that they no longer need but are still useful. Students leave it for another student to take as needed and for free. The tour idea grew from that initial event, resulting in the program touring each lobby of every residential hall on campus.

The *Take It or Leave It* Tour puts the emphasis back on the first “R” **REDUCE** and promotes one simple way to decrease waste by giving away items that can be reused. Collegiate Recycling Departments spend a great deal of time collecting recyclables and educating the campus to “get it in the bin.” The tour is designed to increase visibility and participation in resource conservation within the UNC Charlotte community by bringing it to the people.

Participants in the *Take It or Leave It* Tour become more conscientious of recycling and reusing their school and office supplies.

The *Take It or Leave It* Tour is simple to operate and is managed by one staff member utilizing one electric cart. The *Take It or Leave It* Tour travels around campus, visiting academic and residence areas. Students and staff bring items to the table that they no longer need but which are still useful. Items are brought to the table and taken as needed. Quality reusable items that were formerly thrown away, such as books, notebooks, magazines, electronics, posters, sporting goods serve as the bulk for our giveaway program. Everything is free.

On average, nearly 100 visitors participate in the *Take It or Leave It* Tour over a three-hour period. Over the last four years the *Take It or Leave It* Tour has collected and given away thousands of pounds of items.

This program promotes campus wide involvement, through active partnerships within campus communities, especially the Housing & Residence Life Department. The Office of Waste Reduction & Recycling educates the campus about waste reduction and manages the *Take It or Leave It* Tour.

Facilitating campus reuse extends the life of resources, and helps to Keep Charlotte Green. The program inspires creative reuse and environmentally sustainable behavior by providing education and free materials to the campus community. Participants in the *Take It or Leave It* Tour become more active recyclers and environmentally aware.





## University of Southern California

### MAINTENANCE PARTS AND MATERIALS PROCESS REENGINEERING

BY DUANE HICKLING, FREDRIC MAUPIN, AND DONNA BUCHANAN

*Duane Hickling is president of Hickling & Associates, Chicago, IL, e-mail dhickling@hicklingassociates.com; Frederic Maupin is managing principal of 5M Consulting, Glendale, CA, e-mail fivem5@pacbell.net; and Donna Buchanan is director, organizational and professional development, for FMS at USC, Los Angeles, CA, e-mail dbuchanan@fms.vsc.edu. This is their first article for Facilities Manager.*

### CHANGING THE WAY FACILITIES TECHNICIANS OBTAIN PARTS & MATERIALS

How does a large research university move its maintenance supplies stockroom off campus while simultaneously increasing the actual amount of technicians' "wrench time on equipment," and raise the completion rate of preventive maintenance work orders? Facilities Management Services (FMS) at the University of Southern California's (USC) University Park Campus simply changed its service paradigm. Instead of technicians hunting down parts and supplies, parts and supplies were brought to them.

### CAMPUS SPACE: A PREMIUM

USC decided to move FMS off campus to make a building site available for the School of Cinematic Arts. Of primary concern to FMS was the relocation of the maintenance stockroom located only a few yards away and used by technicians in the completion of more than 1,000 stock issuances each month.

The new location, approximately a quarter mile off campus, was inaccessible via its fleet of electric golf-cart maintenance vehicles. Despite the change in location, FMS established a goal to *improve* the level of maintenance services to the campus.

### FINDING OPPORTUNITY AMIDST LONGSTANDING PROCESS AND PROCEDURE

The FMS Organizational Development (OD) department worked with Hickling & Associates to create the internal climate and infrastructure conducive of supporting organizational change.

The Steering Committee – front-line staff as well as operations and administrative managers -- provided input on the existing acquisition process, which was unpredictable with high variation in cycle time and a significant amount of technician time spent on travel. This low-value use of high-value technician time was inefficient and contributed to the difficulty in scheduling work and informing customers of project timelines.

### THE NEW DESIGN COMES ALIVE

We facilitated the process of overcoming perceived barriers, and with the Steering Committee brought the customized system to life by:

- Defining the goal
- Facilitating the development of the redesign
- Developing detailed Standard Operation Procedures (SOPs) to support the new process
- Testing the process to ensure its viability
- Establishing metrics to evaluate and monitor the process
- Developing and delivering training to everyone that touched the process
- Implementing, monitoring, and measuring the process to get expected results.



### BUILDING CAPACITY: THE ORGANIZATIONAL SKILL SET GROWS

The Steering Committee became involved in activities and processes that were normally not part of their work day. This led to skill development which is being used for other initiatives across the organization such as:

- Marketing the new process design to the organization and obtaining operational buy-in from front-line staff
- Creating Standard Operating Procedures as well as skills for tracking and maintaining updated SOPs
- Selling the use of reliable and relatively easy-to-use mobile technology to their colleagues
- Establishing the parameters for monitoring, and providing feedback on a pilot test of the process
- Developing a training program and training their colleagues on the Standard Operating Procedures in both Spanish and English
- Developing project management, teamwork, and problem-solving skills to address each stage of the project.






## AND THE RESULTS WERE ...

The Steering Committee created a set of metrics to track success and potential problem areas that focused on nine major parts of the work processes created by the redesign. The committee found that:

1. The use of existing communication technology to order parts and materials from the job site has increased service efficiency and effectiveness
2. The amount of time technicians spend performing maintenance work has significantly increased by eliminating excessive travel time to retrieve parts and materials
3. Technicians now receive work orders for the week, allowing them to scope the work in advance and order needed materials. This scheduling provides the opportunity to more accurately inform customers when a job will be completed
4. The new process has improved performance management by allowing Facilities Management Services to set and adhere to performance standards for various priorities of work (e.g., emergency, routine, preventive maintenance, etc.)
5. There was an initial reduction in the cost of materials and supplies consumed

6. Preventive maintenance work order completion rates increased from approximately 62 to 78 percent within six months
7. The stockroom technicians track delivery schedules and accuracy of deliveries. Deliveries are 96 percent accurate. During the first three months, will-calls to the stockroom decreased to 13 per month while there was an increase in use of the system to nearly 100 percent of all orders
8. With the use of two-way text messaging, voice traffic over the two-way radios has declined increasing the airspace availability for emergencies and other critical organizational communication
9. The initiative provided a unique opportunity for employee participation in problem solving and opportunity for cross-departmental collaboration, which resulted in enhanced morale, improved interdepartmental communication, and greater organizational capacity to successfully complete other continuous improvement programs.

Both John Welsh, associate vice president of USC Facilities Management Services, and Chuck O'Regan, executive director of operations, agree that the primary reasons for the success of this initiative are that FMS partnered with the consultants to establish the vision, concrete objectives, and the approach to effectively accomplish the endeavor. Most importantly, FMS included a diverse cross-section of the organization, including front-line workers, in the analysis and reengineering effort. The Steering Committee's ongoing stewardship has also been a crucial factor.

To view the full report, which includes performance metrics and flowcharts of both the old and new processes, visit the USC Facilities Management Services website: <http://www.usc.edu/fms/documents/WhitePaperUSCInnovativeEffectivePractices.pdf>. 

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