# Going Green $aves Green –
# University of South Carolina's Green Efforts Becoming Best Practices

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***Going Green Saves Green $$$***
***University of South Carolina's Green Efforts Becoming Best Practices***

*Many institutions agree that environmental or green initiatives are the right thing to do, but think those initiatives are more expensive to implement and therefore fail to do so, particularly in tight fiscal circumstances. As the state's flagship institution, the University of South Carolina's (USC) department of university housing has successfully implemented several "green initiatives" to demonstrate savings possible with such efforts while also setting an example for its students, the university and the state of South Carolina. We believe these initiatives will quickly become best practices. These include but are not limited to:*

***Flat Screen/LCD Computer Monitors:*** *University Housing has replaced all of its 250 computer monitors (CRTs) with new flat screen LCD monitors*

- *Projected annual savings = $8,000 in reduced electrical consumption.*
- *Project savings if entire campus switches from CRT to LDC monitors = $325,466 - $976,400 annually depending on daily usage.*

***Efficient Washer & Dryers:*** *University Housing has switched all of its 172 washers and 172 dryers to high efficiency front-loading washers and dryers.*

- *Projected annual savings = $19,600 in electric and water bills.*
- *Reduced water use by 2 million gallons annually.*

***Alternative Fuel Vehicles:*** *University Housing has implemented the use of four electric vehicles (fuel and operating costs 80% lower than traditional vehicles) for maintenance crews.*

- *Projected annual savings = $16,000.*

***West Quad Center for Sustainable Futures:*** *The new "Green Dorm," housing 500 students is designed to LEED (Leadership in Energy and Environmental Design) certified by the US Green Building Council.*

- *The complex will reduce water consumption by over 20% and energy consumption by 30% as compared to a traditional residence hall*
- *Projected annual savings = $50,000.*
- *The project is being built at the same cost factor as earlier traditional residence halls.*

***Take It or Leave It – Move Out Recycling:*** *Established a student/staff recycling program at the end of the year in partnership with charitable organizations in the community.*

- *Projected annual savings = $30,000 in waste management.*
- *Contributed 40 tons of materials and useable products to community charities such as Habitat for Humanity, Harvest Hope Food Bank, and Salvation Army.*

*These efforts at USC thus far have not only saved money and promoted sustainability, but have also established "best practices" demonstrating that sustainability makes good business sense.*


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**Introduction of the Organization:** The University of South Carolina (USC) is the flagship university for the State of South Carolina. Situated in the state capital, Columbia, the main campus has a uniquely "visible" status, literally across the street from the halls of state government. Thus the demonstrated practices and research at the University often serve as catalysts for action affecting the rest of the state in both legislative and regulatory manners. The University, a Carnegie Doctoral/Research Extensive institution, has approximately 23,000 students (15,500 undergraduates and 7,500 graduate/professional students). The main campus is situated on approximately 300 acres in downtown Columbia.

The primary benefactor of the "best practice" initiatives described herein is the department of University Housing at USC. However, this department has made a commitment to not only implement "best practices" for their own departmental benefit, but perhaps more importantly to model the "best practices" for the rest of the University and to use them educationally with the students, faculty, and staff throughout the campus.

The department of University Housing is responsible for facilities housing approximately 7,000 students on the Columbia campus and an operational budget of just over

$20,000,000. These students reside in a variety of buildings of differing ages totaling just over 2,000,000 square feet. Approximately 150 full-time staff and over 300 part-time student staff work in the department to deliver quality accommodations and educationally purposeful opportunities for students.

The department has a history of innovative management and educational initiatives, partnering closely with Academic Affairs and the Division of Business and Finance. Organizationally, the department of University Housing is in the division of Student and Alumni Services. Since 1993 the leadership and management in the department have focused on quality and continuous improvement initiatives while maintaining a focus on service excellence. The department has been recognized for excellence in various manners over the past 10 years, most recently as a major player in programs serving students in their first year of college that lead to the USC being named one of 13 Institutions of Distinction in the First Year of College. Previously, the department also played a significant role in the university being named as a recipient of the Baldridge Award for Quality in Undergraduate Education.

**Statement of the Problem/Initiative: The problem being addressed with the initiatives that will be detailed in this report is simply: How can we conserve our fiscal and other resources while practicing sustainable, environmentally-friendly business facility management practices and thus demonstrate that sustainable design, operations, and processes are good business for financial as well as social means.**

University Housing at USC is in many ways a small town with approximately 7,000 resident citizens living and learning in 28 buildings situated across our 300-acre campus. These communities within the larger university community have a significant impact on the environment. While students, faculty and staff are increasingly interested in living and working in more environmentally sensitive ways, there is a perception that to do so costs more operationally than to do otherwise. In today's constricted financial times, adding cost to any function is difficult even when it appears to be the "right thing" to do.

University Housing at USC decided to become a leader in "green" practices at USC and demonstrate that many green practices can be implemented without additional costs, and in fact, can be shown to save money and other resources, thus becoming best business practices along with being socially instructive stewards of the environment.

The impetus for this "shift" to sustainability and green practices was the leadership of the Sustainable Universities Initiative hosted by the School of the Environment at USC. Through membership on USC's Environmental Advisory Committee (EAC), the director of Student Development and University Housing become first sensitized to environmental issues on campus and then energized to use the department of University Housing as a model for the university community and later to other campuses through modeling, presentations, articles, and consultations.

**<u>Environmental Program Manager</u>: Creation of a position for the department to develop a sustainable community model that may be implemented within University Housing for export throughout the Columbia campus and all branches. Implement green cost saving systems and synergies.**

**Design:**

- Obtain input from members of the Environmental Advisory Council (faculty, staff and students), the Dean and faculty in the School of the Environment and staff from the Sustainable Universities Initiative (SUI).
- Obtain grant supported funding from above sources to pay all or a portion of the position's salary. Funding for the position was provided by the Rasmussen Foundation funded SUI (100% first year; 75% SUI/25% Housing in second year; 50% SUI/50% Housing for third year; 25% SUI/75% Housing in fourth year; 100% Housing from fifth year forward if evaluation of benefit finds it justifiable)
- Position to create savings and benefits sufficient for the position to be self-sustaining financially (in the second year, we're already way ahead on this issue).

**Implementation:**

- Develop initial job description.
- Follow normal hiring procedures.
- No initial budget or support staff allotment from housing budget

**Benefits:**

- Increase awareness and participation of employees.
- Conduct fiscal analysis of potential green initiatives
- Design and implement programs
- Train and educate staff and residents.
- Manage publicity (several articles published locally and nationally in first year)
- First year savings from various initiatives exceeded salary for the position (with the salary initially funded 100% from grant, the savings fell to the bottom line of the housing department and other agencies benefiting from the initiatives.

**Retrospect:**

- Establish Department wide environmental and/or sustainability goals. Include same goals as part of mission statement to ensure participation and support of all.
- Obtain outside funding for graduate student support to concentrate on resident education and promotion. Work directly with Residence Hall Association.
- Consider a $1-$3/student fee to cover expansion of programs.

**<u>Efficient Washers and Dryers:</u> Based on earlier research, we decided to include a specification in our RFP for resident laundry services that the successful vendor will provide and install the most efficient front-loading washers and dryers. Research indicated the washer could hold 1/3 more clothes. Because of the water extraction spin cycle of the washers, it was determined that the dryers would actually dry**

**increase amount of clothes in less time. Incorporated a debit card system for the laundry since university had not yet implemented a one-card system.**

**Design:**

- Reduction of capital expenditures for equipment purchase and operational maintenance costs by outsourcing the service.
- By providing the students, through their Residence Hall Association, information that demonstrated the larger load per cycle washed and the less time to dry each load, we were able to gain support for an increase in laundry machine fees.
- Even with significant capital costs for the vendor, was able to negotiate a higher revenue split for the department and increase revenue for both parties through increased fees to wash and dry.
- No additional departmental cost, employee requirements or beyond the development of the RFP.

**Implementation:**

- Coordinate switch out of old machines and installation of new.
- Coordinate recycling of old machines.
- Completed new installation during the summer.
- Attention to contract negotiations. Ensure clarity on liability, limitations and responsibilities.
- Ensure vendor's maintenance and cleaning responsibilities.
- Confirm price settings for students are market competitive.
- Educate students on proper use, debit card system, and conservation benefits to which they were contributing.

**Benefits:**

- Savings of nearly $20,000 annually in electric and water charges.
- Reduction of water consumption by 2 million gallons annually.
- Phone reservation and cycle completion notification system provides convenience for students.
- Reduction in associated capital, maintenance and personnel costs.
- Gained local and national publicity for USC from the initiative.

**Retrospect:**

- Provide a phone number hotline that students may call to report machine problems or card system outages immediately.
- Ensure more frequent card refills at the start of the semester.
- Specify a prescribed regular cleaning of vents that will be documented.

**<u>Move Out "Give It Up" Program:</u> When 7,000 college students move out of their residence halls each spring, they create/leave an enormous amount of their "stuff," some of it still with useful life and some of it simply trash. We struggled for years to manage the waste and dumpsters during this weeklong exodus. Landfill tipping costs were skyrocketing and we needed a new solution, thus was born the "Give it**

**Up" initiative to increase reuse and recycling of students' waste and to reduce waste management costs for custodial labor and dumpster tipping charges.**

**Design:**

- Planning with a multiple department committees of staff and students (Housing, Facilities, Parking, Recycling, Student Government).
- Minor expense for printing flyers to publicize the program
- Time Requirements: At least one full time person for two weeks. Approximately 40 hours of volunteer time.

**Implementation:**

- Begin planning 2 months in advance of the last day of finals.
- Coordinate with charities and agencies ahead of time as they may become overwhelmed quickly with volume of contributions.
- Coordinate with other schools and agencies to take furniture.
- Commitment of one full time staff to coordinate and work collections for two weeks.
- Obtain donated boxes and "gaylords" from corrugated manufacturer or recycler.
- Push promotion and awareness through all possible venues.
- Recruit volunteers and/or use mandatory community service students.
- Need support of Residence Assistants (RA's) to promote and set example.
- Set up boxes and "gaylords" 1 ½ to 2 weeks in advance of finals.
- Begin collections within 2 to 3 days of dropping boxes and then as needed.
- Manage pick ups as often as needed to avoid theft and contamination
- Drop off at local charities as truck fills.
- Reduce labor cost by having charities pick up their materials when possible.

**Benefits:**

- Save approximately $30,000 per year in disposal and labor costs.
- Positive publicity for the University.
- Aid local charities.
- Faster clean up of campus.
- Reduced impact on staff. Students move bulk materials out of buildings themselves.
- Keeps trash containers and building trash chutes clear.
- Collects approximately 36-49 tons of clothing, food, toiletries, cement block, loft wood and carpet annually. Recycle approximately 1500 beds annually. During major renovations another approximately 80 tons of furniture is recycled.
- Promotion and education to students and their families about the value of recycling.

**Retrospect:**

- Increase publicity that items contributed will go to charities.
- Space for discarded carpets are difficult to find.
- Set up location of boxes near residence hall exits if possible. Make it easier to recycle than to throw away.

- Place bulk item collection areas close to main doors but ensure vehicle access is maintained.
- Utilize RA's more effectively to promote and set example.
- Use community service students from student discipline office as finals week is difficult time to gather volunteers.
- Send memo out to all departments and employees stating collections are for charity thus banning scavenging.
- Have a back-up plan for pick-ups if charities don't keep their time/date commitments.

**<u>Move In Recycling Program:</u> Each fall when approximately 7,000 students move to the campus residence halls, they generate a tremendous amount of waste with much of it being in cardboard boxes (new computers, packing boxes, etc). We needed a way to reduce our waste management costs for this weekend while beginning to educate our students that recycling is a community standard.**

**Design:**

- Planning should be part of overall housing planning for opening with housing staff, facilities services staff, and residence hall student leaders participating.
- Will take approximately 2 people over 4 days plus custodial and volunteer assistance.
- Designate corrals for cardboard.
- Approximately $450 for banners, corral materials, and publicity flyers.
- Covers a 4-day period for set-up, move-in weekend, and removal of materials and corrals.

**Implementation:**

- Begin planning 1 month in advance.
- Coordinate a multi department committee (Housing, Parking, Recycling).
- Utilize scaffolding with flexible construction fencing to build a three-sided corral. Interlocking PVC fencing may also be used.
- Order barricades 1 month in advance.
- Set up corrals and banners 2-3 days in advance. It should take 2 people less than one day to set up.
- Place pallets inside corrals to keep cardboard off wet ground.
- Use banners with zip ties to hang. Zip ties will discourage theft.
- Saturday collection hours 8-5 and Sunday 8-3.
- Partner with city municipal waste department or equivalent to use a rear loader trash truck and two workers. In exchange for no charge for these services they keep the cardboard revenues.
- Custodial personnel occasionally check flatten boxes.
- Trash Truck has radio contact with University Housing to call in priority areas.
- Cardboard pickup will continue for 2-3 days after move in. Campus recycling picks up.
- Tear down will take approximately 2 workers less than one day.

**Benefits:**

- Saves approximately $8,000 per year tipping charges in just two days.
- Keeps cardboard from clogging trash containers and building trash chutes.
- Reduces labor impact as students and parents participate.
- Reduces the number of vehicles on campus.
- Publicity and education.
- Feeling of positive participation by students and family.
- Positive publicity for the University for their environmental and financial stewardship.

**Retrospect:**

- Coordinate with parking to place barricades up at least one day early to ensure truck access to corrals.
- Locate corrals near common entrances but still allow truck access.
- Produce signage throughout residence hall on all building doors. Use the back of stall doors in rest rooms.
- Train RA's and custodial staff ahead of time. Their participation is key. Students and parents will follow their actions.

**<u>Alternative Fuel Vehicles</u>: As the department of University Housing began including sustainability as an operational principle, we began to examine many other aspects of our operations to see where environmentally sensitive initiatives could make good business sense. Our vehicular fleet emerged as one area we could enhance in this manner, particularly with electric vehicles for some functions.**

**Design:**

- Determine need and function of vehicle(s) ahead of time.
- Research various manufacturers and models of vehicles that were more environmentally friendly.
- Arrange on site test drives if possible, visits if needed.
- Compare costs versus functions. Assess first costs with life cycle costs.
- Initial time and employee minimal for research needs. Initial capital investment will be in the range of $6-13,000 per vehicle (actually no more, and in some cases less, than a traditional vehicle purchase).

**Implementation:**

- Work with State procurement and Fleet Management. Allow up to three months for procurement. Confirm ability to purchase outright under state procurement regulations and current fleet contracts.
- Consider leasing for large vehicles.
- Expect issues with bidding requirements, as there may not be many dealers in area.
- Initial capital investment of $6-$13,000 for purchase of a vehicle.

- Work with local Clean Cities Coalition and state agencies to find grants and potential state and/or federal tax credits.
- Electric vehicles require less than 30 minutes per week for maintenance.

**Benefits:**
- Payback of approximately 2 ½ years.
- Approximately $2500-$4000 annual savings per vehicle after payback.
- Easy access around campus and street legal.
- Easy parking and traffic congestion on campus.
- Near zero emissions.
- 80% lower fuel and operating costs.
- Increases awareness and education. Popular attraction for events.

**Retrospect:**
- Maintenance is minimal but necessary. Appoint a responsible individual or utilize a check sheet.
- Establish initial training system so that all drivers understand maintenance requirements.
- Purchase extension cords ahead of time for electric vehicles
- Identify recharging and parking/storage areas.

**Flat Screen/LCD Monitors: We wanted to establish a two-year lease program for our computers in both administrative offices and student labs for two key reasons. First to establish a two-year replacement program for our desktops and laptop computers. Secondly, to establish a recycling process that would not burden our own staff. As we explored various options, the issue of flat screen monitors arose with the idea that it may be cost prohibitive a this point. Further examination of this newer technology though uncovered literature suggesting a significant energy savings might be realized through the use of such screens. This idea made the first cost issue more acceptable leading to more detailed analysis and negotiations which resulted in more reasonable first cost with projected savings significant to our department and which suggested possible enormous savings to the University were it to follow our lead. That analysis is currently being conducted.**

**Design:**
- Some research required by IT Manager or Environmental Manager.
- Support of IT Manager and Business Manager required.
- Completed during normal vendor contract negotiations at end of normal lease period.
- Leasing avoids any initial extra cost for the monitors. University may be going to bulk purchasing in the near future. Most recently the Department was able to obtain better computers with the LCD monitors for a similar price.
- No extra cost, employee requirements or time required.

**Implementation:**

- No extra time required beyond cost analysis.
- No extra personnel required.
- Vendor provided initial energy savings analysis of CRT versus LCD monitors
- Energy savings confirmed by independent analysis conducted by our regional utility provider (SCE&G) who was providing free consultation to our department on several sustainability issues.
- Procurement timed to allow computer changeovers during less problematic time (summer).

**Benefits:**

- Up to $15,000 annual savings for the department in electricity consumption by the monitors alone. Potential savings if LCD's are implemented University wide is up to $976,400 annually.
- Reduced cooling costs since LCD screens also put out less heat.
- Improved ergonomics, increased work performance and efficiency.
- Requires less space.
- Uses less paper when printing from Internet.
- Generates excitement and interest by students and staff.

**Retrospect:**

- Could have implemented sooner as it was the easiest "green" act completed, assuming lease costs for LCD screens would have been reasonable.
- Should have conducted more promotion on campus.
- May promote LCD technology to new students bringing desktop computers to school next year.

**West Quad Living and Learning Community and Center for Sustainable Futures:**

**We knew we needed to plan the next new residence hall following the construction of a 400 bed residence in 1997 and another opening in 2000 with 440 beds. The Dean of the School for Environmental Studies and our own Environmental Program Manager made the director aware of the US Building Council's green building certification program, Leadership in Energy and Environmental Design (LEED). While initially being told that building a "green" facility would add up to 30% to the construction cost, we decided to seek the certification within a budget that was predicated on the cost of the earlier built traditional residence halls (escalated only for normal inflation). We thought that be doing so and by designing the residence to enable students and faculty to work together in residence on issues of sustainability, we could create a model for living and learning and for a new paradigm in campus construction. Our bids proved that it can be done without adding cost as they successful bidder is actually nearly $500,000 under our projected cost. Construction is now underway.**

**Design:**

- Requires strong commitment and planning ahead.
- Education of decision makers and design team on LEEDs criteria is a must.

- No additional costs. It is being done for the same cost of a traditional building.
- Normal construction timeline.
- Required departmental research on some aspects of sustainability since some of the engineers and architects were new to the idea of "green building design."
- Provided a great opportunity for academic departments and their faculty to be involved, and many were.
- Encouraged faculty to seek grants related to sustainability issues to apply in this facility.
- High level of student participation from initial design forums to research and thesis work.

**Implementation:**

- Make commitment, and make it publicly known.
- Bring in support and allies such as School of the Environment and Sustainable Universities Initiative.
- Begin planning early to follow a normal construction timeline.
- Educate Board of Trustees, Architectural Review Board and other decision makers.
- Hire 'experienced' architects and design team.
- Utilize a third party commissioning firm to ensure quality, timeliness and fiscal responsibility.
- Expect resistance at first from "old school" individuals. Unfortunately these individuals are the same ones that the project or project decisions may depend on.
- Develop partnerships with academic schools, private companies and state agencies early.

**Benefits:**

- Projected 30% less energy consumption (a LEED's criteria).
- Projected 20% less water consumption (a LEED's criteria).
- Reduced maintenance costs projected for various aspects due to materials and systems selected to meet LEED's criteria.
- Increased building performance through required commissioning (a LEED's criteria)
- Healthier building that increases student and employee performance and satisfaction.
- New curriculum designed around the Learning Center (a 7,700 square foot academic wing with sodded roof, a fuel cell (faculty grant) and other sustainable features.
- Catalyst for new partnerships with academic affairs through the Learning Center Task Force currently designing the educational program to be offered in this center and residential community.
- Has created great publicity with inquiries coming both nationally and internationally. .
- Created new faculty and student teaching and research opportunities.
- New interdisciplinary partnership development encouraged.

- Catalyst for consulting partnership with our regional energy company (SCANA/SCE&G).
- Has taught the university and local architect community about sustainable design issues.
- Has served as a catalyst for furniture and other suppliers to begin thinking "green" in their business with University Housing.

**Retrospect:**

- Obtain commitment from high-level officials and decision makers earlier for the greening of the project.
- Educate decision makers earlier.
- Have the Provost establish the faculty learning center task force before the design process so their work can influence the design process.
- Seek and develop internal and external partnerships earlier.
- Utilize a more "green building" experienced design team.
- Use a third party commissioning agent that works for the University and involve them in the design stages as well as the correct construction and systems verification processes.

**Summary: University Housing at the University of South Carolina made a commitment to begin exploring ways to do business that were environmentally more sensitive while enabling more effective and efficient use of its resources, financial and otherwise. The initiatives detailed here are each sufficient to stand on their own as effective business practices. Taken together though, they communicate something on a more grand scale – that best business practices can accomplish several goals at once. In these initiatives, we've demonstrated that "green can mean $$$green" and at the same time serve to teach others the value and means of sustainability as an operational principle while serving the good of society in earth-friendly ways. These initiatives have served as catalysts for staff, faculty and students to work more collaboratively together for the good of the broader community. We believe "green business practices" are the *best business practices* for the future. Thank you.**

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