

MAY 2010



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SmartLessons

real experiences, real development

From Burdens to Brownie Points: From “Have To’s” to “Want To’s” to Combat Climate Change

You don’t have to be a psychologist to find yourself having to change or influence people’s behavior. And that is a challenge, especially when the change involves costs in time, effort, and money—and the potential benefit is not yet tangible. Add to that humans’ natural resistance to change, and you’ll have an idea of the challenge the IFC HQ Facilities Management Team faced in aligning the IFC HQ Building with IFC’s commitment to sustainability. Though many of us intellectually understand the global discussions about climate change and sustainability, we frequently have difficulty changing our own daily behavior, let alone influencing that of others. Our team has learned a lot about this over the past seven years. We have learned how to transform what we initially perceived as “burdens” of operating our building more sustainably into real cost savings, environmental impact reductions, and reputational benefits for IFC by changing attitudes and behavior—starting with our own. These lessons are applicable to IFC’s internal operations and to helping IFC’s clients improve their sustainability performance. How can you do it? Where do you start? Here is our story.

Background

When IFC began to focus on HQ Building sustainability as a critical business objective, members of our team were resistant to the idea, not because it was a bad idea but because our plates were so full and we saw no immediate bottom-line effect on operations. Besides, we felt that the building was already running very efficiently. We had won the prestigious EPA (Environmental Protection Agency) EnergyStar award for energy efficiency annually since soon after the building had opened in 1996. Why do more?

In 2007, IFC created the Footprint Program, elevating issues of sustainability and climate change. Our IFC colleagues were pushing us. At first we resisted, then began slowly paying attention, but with an “attitude.” It felt like a major burden. My task of overseeing the day-to-day operations of our building put me in the role of leader and facilitator, and yet I had the same initial feelings as our team. It felt like a “have to,” and I had to help motivate the team and myself. So we began working on it, understanding intellectually that it was

important and that our work would support IFC and its business objectives. We also educated ourselves by preparing for, taking,



IFC HQ Building.

and passing (four members) the exam to be qualified as LEED Accredited Professionals by the U.S. Green Building Council (see box on page 4).

Though it took time, we did a 180-degree turn in attitude, motivation, and behavior—from perceived burden to the bottom-line business of saving real money for IFC, walking the talk, and competing to find the next savings opportunity. We moved from the attitude of “have to” to “want to.”

We achieved the following measurable results (see Figures 1, 2, and 3) in dollar savings and in environmental impact reductions:

FY10 SUSTAINABILITY						
	Capital Investmt Costs (1k)	Annual Ongoing Costs	Annual Gross Savings	Annual Net Savings	Environ Savings	Measure
ENERGY	\$70,000	\$ 15,800	\$ 293,020	\$ 207,220	2,093,000	KwH
Reduce operations hours		\$ 71,400	\$ 71,400	\$ 510,000		KwH
Install VFD's on motors		\$ 54,880	\$ 54,880	\$ 392,000		KwH
Delamp 50% ten floors		\$ 63,420	\$ 63,420	\$ 453,000		KwH
CFL Replacement of incand.		\$ 41,020	\$ 41,020	\$ 293,000		KwH
Turned off parking level drive lane lights on B2, B3, B4		\$ 10,080	\$ 10,080	\$ 72,000		KwH
Buy renewable Energy certs		\$ 15,800		\$ (15,800)	18	M tons carbon
Change HVAC set points cooling season (1 degree)			\$ 23,660	\$ 23,660	169,000	KwH
Change HVAC set points heating season (1 degree - estimated?)			\$ 18,480	\$ 18,480	132,000	KwH
Install ofc occup sensors - all offices (500+)	\$70,000		\$ 10,080	\$ (59,920)	72,000	KwH

Figure 1: FY10 Sustainability Data for Energy

FY10 SUSTAINABILITY						
	Capital Investmt Costs (1k)	Annual Ongoing Costs	Annual Gross Savings	Annual Net Savings	Environ Savings	Measure
WATER	\$ 2,255	\$ -	\$ 40,941	\$ 38,686	4,816,548	Gallons
WC flush valve conversion		\$ 31,450	\$ 31,450	\$ 3,700,000		Gallons
Lav faucet flow reduction		\$ 6,268	\$ 6,268	\$ 737,375		Gallons
Shower hd flow reduction		\$ 1,291	\$ 1,291	\$ 151,875		Gallons
Urinal flow reduction	\$ 1,430		\$ 1,116	\$ (314)	131,250	Gallons
Pantry faucet flow reduction			\$ 733	\$ 733	86,250	Gallons
Install rain sensors/Irrigation	\$ 825		\$ 83	\$ (742)	9,798	Gallons

Figure 2: FY10 Sustainability Data for Water

FY10 SUSTAINABILITY						
	Capital Investmt Costs (1k)	Annual Ongoing Costs	Annual Gross Savings	Annual Net Savings	Environ Savings	Measure
WASTE & RECYCLING	\$ -	\$ 39,740	\$ 10,000	\$ (29,740)		
Technotrash recycling				\$ -	185	Lbs (ytd)
Battery recycling (incl)				\$ -	5,747	Lbs (ytd)
Cardboard recycling (incl)				\$ -	26	Tons (ytd)
Paper recycling				\$ -	172	Tons (ytd)
Glass, Plastic, Alum. (incl)				\$ -	7,960	Lbs (ytd)
Replace pap towel dispens.		\$ 10,000	\$ 10,000	\$ 1,740,570		LF
Sold 600 desk chs to reuse				\$ -	16,277	Lbs (ytd)
Recycled office furn (incl)				\$ -	65,473	Lbs (ytd)
Recycled PCs fr bulldoze				\$ -	10,353	Lbs (ytd)
Recycled carpet					62	Tons (ytd)
Convert to 100% recycle paper		\$ 39,740		\$ (39,740)	23,000,000	Sheets
Light Bulbs & Ballast					2,217	Lbs (ytd)
Recycled misc. metal					25,000	Lbs (ytd)

Figure 3: FY10 Sustainability Data for Waste & Recycling

Electricity: Between 2003 and 2008, we reduced IFC HQ’s electricity consumption by 18 percent. Between 2008 and the end of FY10, we will have reduced our electricity consumption by an additional 27 percent. We have set a goal for further reductions of another 25 percent over the next four years. On average, we have saved \$250,000 per year and enough electricity to power over 200 average U.S. homes for one year.

Water: Since 2007, we have saved over 13 million gallons of water, an average of 4.5 million gallons per year. The total savings represents close to 300,000 bathtubs of water and more than \$100,000 in annual cost savings. To achieve this required less than \$8,000 in improvements. The annual savings in water and dollars will continue.

Waste/Recycling: We have recycled and diverted from landfill more than 1,100 tons of material since 2007, an average annual diversion of more than 350 tons. This includes recycling paper, plastic, glass, carpet, and metal waste, as well as selling or donating computer equipment and office furniture for reuse.

Lessons Learned

1) Low-cost/no-cost opportunities abound to improve “sustainability performance” in operating a building (or office or plant). We initiated a variety of operational changes that had big impacts. Energy, especially electricity, is the largest single cost in operating the IFC HQ Building, and it creates the largest negative impact on the environment (representing about 40 percent of IFC HQ’s carbon footprint). Given our limited resources and limited time, and our initial desire “to do as little as possible,” we initially focused on the area that could get the biggest bang for our buck.

The first idea that led to some easy success came from an IFC staff member: What if we removed some portion of the ambient-light fluorescent tubes in open office areas? How much could we save? Could staff tolerate less light in the office areas? We experimented in various building locations. Ultimately, we removed 50 percent of the light tubes throughout the building. This alone saved 453,000 kilowatt hours of electricity, worth \$60,000 a year (a year’s worth of power for about 40 typical U.S. homes)—and at no cost!

When we realized what we had accomplished, my role of facilitating became much easier. Initially I had shared my own doubts but “pushed forward” gently. The early results began to pull everyone into the challenge.

2) Build big on small successes. If you are advising a team or working with a client, see yourself as an educator and facilitator. Your objective is to help increase their awareness of the possibilities so they can begin to see real benefits. Change is a process, not a one-time event. You can’t change behavior without helping people change how they think about a particular challenge. Suggesting or modeling simple changes that cost little but have an impact will help people experience success for themselves. That experience, whether in dollar savings or environmental impact, can help them begin to change their thinking and subsequently their habits.

We learned that by using low-cost/no-cost efforts to create small, measurable successes, we could build on those to change attitudes and behavior. Those successes demonstrated that sustainable practices don’t necessarily require major investments or substantial additional costs. As our team began to see real dollars saved, their perceptions of the benefits started to change. The added work began to be less of a perceived burden.



Building systems.

If the money-saving incentive helps motivate people to “do the right thing,” then over time they are likely to begin changing their thinking. In addition to bottom-line savings, they may also begin to realize the positive impact of reducing environmental negatives.

As the light bulbs went off in the office, the light bulbs began to go on in our heads, and in our attitudes. As we began to report this little (virtually no-cost) success to others, we were further motivated by the “wow” responses, and we started to look at other possibilities. Where could we do more? How much could we save? How far could we go?

Team members began proactively seeking more opportunities and taking the initiative. For example, our engineering team began analyzing the less obvious building equipment that uses electricity. Because each floor has three zones for humidification, and the humidifiers use lots of power, the team experimented with limiting the use of these units to see whether proper humidity levels could be maintained while using less power. And in this new light, we revisited other areas of operations that we had all taken for granted.

It took persistence, but we began to break out of our rigid thinking, and stopped dismissing ideas before they could even be tested. Also, the new attitude that “anything we could think of was at least worth considering” helped promote our collective creativity. Instead of letting people give up, I tried to make it fun: “Humor me. Let’s play ‘what if...’”

For instance, our parking garage seemed “overlit,” so we started talking about all kinds of complicated ways to reduce the lighting—recircuiting, timed sensors, and so on. Eventually, we figured out that we could simply turn off drive-lane lighting and still have sufficient light from remaining fixtures, saving 72,000 kilowatt hours and \$10,000 annually—at *no cost!*

Another example was seasonal plantings. Since the building first opened, we would replace exterior plantings with colorful water-drinking annual flowers twice a year, spending approximately \$40,000 per year. When someone

suggested we replace all the plantings, our initial response was, “No way!” ...followed by, “Why not?” So we replaced them with native-adaptive plant species, saving the annual costs and reducing water consumption. Taking it a step further, we invested less than \$1,000 in rain sensors to monitor rainfall and switch off irrigation water when it was not needed. This alone saves close to 10,000 gallons of water annually. This would never have happened, had we not questioned our assumptions.

3) You can’t manage what you don’t measure. One of our early steps was to gather data about our performance with a building-assessment study to evaluate the efficiencies of various systems. We methodically gathered data about electricity and water consumption, how much material we were recycling and how much we were putting into trash, and so on. At first, it was a painful process—not difficult, just cumbersome and time consuming. It took effort and persistence to gather energy data from previous years and to begin regular collection going forward. But as we gathered and began maintaining data, we were able to use the data to analyze the life-cycle economic costs and benefits of investments to gain savings and reduce environmental impact.

For example, we spent \$5,500 to replace all of the toilet flush valves in the building to save water. This resulted in a first-year net savings of \$24,000 and 3.7 million gallons of water. On a larger scale, we invested \$100,000 to add variable frequency drives (VFDs) to all mechanical-equipment motors, such as air-handling equipment for heating, cooling, and ventilation. VFDs control how much electricity the motors use, so that they use only what they need rather than running at full capacity even when not needed. We saved \$50,000 a year in electricity, so the investment paid for itself in two years. Since their installation, VFDs have saved 392,000 kilowatt hours (enough to power 35 homes for a year) annually. And the savings from these two investments will continue.

If you don’t have or cannot get data, start where you are. Organize a simple system for gathering and collecting data from utility bills *on a regular ongoing basis*, and do it. Had we not had the data about our performance, we would never have been able to recognize the improvements we made, let alone analyze the potential investments.



Candidates for recycling.

We also conducted a comprehensive waste audit—a fancy name for a day of dumpster diving! We identified, categorized, and weighed all waste going out of the building. Then we compiled and analyzed the information to extrapolate representative annual data for the building.

So, what did we learn from dumpster diving (aside from the fact that trash is smelly)? The IFC HQ Building has a total waste stream of 452 tons per year. Of that, 160 tons (35 percent) is being recycled. The remaining 292 tons (65 percent) currently goes into landfill. Of that, approximately 20 tons represent material, that—if all IFC HQ Building occupants changed their behavior—could be recycled and thus diverted from landfill. What is in those 20 tons? About 12 tons of paper, 2 tons of plastic, 5 tons of cardboard, and 2.2 tons of paper coffee cups.

And how will we use the information? The information has helped us identify another target for waste reduction that will inform operational changes in the building and efforts to further educate IFC staff. If we were to capture only half of the 20 tons noted, on an annual basis we would save 50,000 gallons of water, 29,000 kilowatt hours of electricity, and 50 barrels of oil, and prevent the release of 420 pounds of pollutants into the air. We will conduct another dumpster dive a year later to see how much progress we have made.

The culmination of our data-gathering efforts, which document with hard evidence our operational performance results, is our most recent achievement: For meeting the highest level of performance for sustainable building operations and maintenance, IFC HQ was awarded LEED Platinum Certification (see box) for an existing building—a significant accomplishment, publicly recognized not only in the United States but also worldwide.

Data gathering and tracking have become “standard operating procedure.” It is less of a burden, because we do it systematically, and we see the benefits. The data enable us to gauge what we’ve accomplished. We are excited by seeing improvement and being able to set measurable goals.

Conclusion

What began as a burden became a new competitive challenge for us—a genuine “want to.” We not only changed our own attitudes and behavior, but we achieved significant business results for IFC in dollar savings and in public recognition of IFC’s ongoing commitment to reducing negative impacts on the planet.

Box: LEED (Leadership in Energy and Environmental Design)

LEED is an internationally recognized green building-certification system created by the U.S. Green Building Council (USGBC). It provides third-party verification that a building is designed and built using strategies to improve performance across all metrics most critical for reducing environmental impact: energy savings, water efficiency, CO2 emissions reduction, improved indoor environmental quality, sustainable purchasing and management of resources, and sensitivity to their impacts. USGBC also accredits industry professionals in LEED.

A performance-based metrics system that aims to change people’s behavior, LEED evaluates projects or buildings, assigns credits, and awards certification based on demonstrated, documented building performance.

Applicant projects or buildings must meet a stringent set of building performance prerequisites—reflecting values based on NIST (National Institute of Standards and Technology) weighting, and the U.S. EPA’s TRACI (Tool for the Reduction and Assessment of Chemical and Other Environmental Impacts) environmental impact categories—before even qualifying for certification.

LEED Platinum is internationally recognized as a substantial achievement, especially for existing buildings that were not originally designed with sustainable operations in mind. Only 30 existing buildings in the entire United States have achieved LEED Platinum.

LEED Certification is not a one-time award. It must be maintained with ongoing demonstration of performance, and the IFC HQ Facilities Management Team aims to further improve its performance. We hope you join us in this positive effort!



IFC Staff: The people who can make it work!



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