SMART, GREEN + PRODUCTIVE WORKPLACE

Abstract
The desire by organizations to be green, to be seen as green, and to shave costs is changing the way they manage their corporate real estate portfolios. However, in an age of fierce competition, the greatest driver of change in the workplace is the need to create an environment where ideas can flourish and be turned into business advantage. This means creating a workplace where a corporate culture finds its fullest expression, and where employees feel healthy, comfortable, inspired and connected.

This paper explores the financial implications and strategic advantages of greening the workplace, and of creating conditions that enhance the corporate culture and maximize employee productivity. It also presents a systematic methodology to make a portfolio of leased offices more green and more productive, and to align corporate culture in the workplace with bottom line cost savings. In addition, the paper touches on how smart building technologies are already accelerating these changes.

Keywords:
Smart, Green, Energy, Productivity, Wellness, Savings, Corporate culture

1 ‘SMART, GREEN + PRODUCTIVE’ DEFINES A WINNING WORKPLACE CULTURE

Secretary General of the UN, Ban Ki-Moon noted, “We’re the last generation that can take steps to avoid the worst impact of climate change. Future generations will judge us harshly if we fail.” The real estate industry is one of the greatest emitters of greenhouse gases. We have a moral and existential imperative to act; but there are also business reasons. Companies are realizing that sustainability must now be part of their overall business strategy to maintain a strong position in the marketplace. The competitive arena for all businesses is now largely determined by the way that they use — or misuse -- the environment.

That green mindset also resonates with employees. A study of over 5,000 firms found that employees working in firms that have a green culture in the workplace are significantly more productive. These organizations attract talented people who are progressive and open-minded, and who tend to innovate by viewing every aspect of the business through the lens of economic, environmental and social sustainability. Companies that adopt green and productive policies in all of their operations, including the workplace, tend to keep ahead. Perhaps they were better to start with, but these policies drive mechanisms that enable them to continue to improve.

There are also operational and economic advantages in greening workplace features and operations. To see the potential for energy savings in an office environment, try EPA’s Savings Calculator for ENERGY STAR Qualified Office Equipment. Tenants may not control what’s going on with the boilers, chillers and other energy intensive systems, but they do have some control over the plug load, lighting, server rooms, and even to some extent, the heating and cooling. Smart building technologies can greatly increase these savings, enabling the lighting, HVAC and plug load to turn on or off automatically, and even controlling window blinds.
Faced with dwindling landfill capacity, the cost of having our garbage hauled away is going to increase. The world of waste management is undergoing a “cradle-to-cradle” change that will revolutionize the way we manage waste in our offices. Organizations are now realizing that with some knowledge and planning, they can not only save money, but even earn money by turning some of their waste into a resource. To get real savings – and possibly even a revenue stream - requires a multi-pronged approach that includes reducing the amount of waste in the first place by thoughtful planning and purchasing, re-using materials and raising employee awareness. Waste management procedures and processes can be optimized by using centralized waste collection and smart bins, which get emptied only when they are full, and by right-sizing the waste haulage services. To do this effectively, janitorial vendors and waste haulers need to be empowered and involved in the design of the waste management program. An office waste management program, rolled out across a company’s portfolio of offices offers a visible contribution to a green office culture and also saves money. For example, by adopting a wide range of paperless office initiatives, and setting all its printers to double-sided, WithumSmith+Brown, an accounting firm with six offices in New Jersey, achieved the following savings:

- $22,000 in storage costs for paper documents
- $45,000 in printing costs
- $2,000 in shredding costs
- $2,800 in paper procurement costs

As for water, offices use large amounts, and as the world supply of clean water dwindles and infrastructure ages, the costs of supplying water is not about to go down. In an office building with 500 occupants and 35 toilets, the toilets flush about 400,000 times in one year.iii If these were installed in the mid 1990’s, then retrofitting to dual-flush toilets would save more than a million gallons per year - almost two Olympic swimming pools or $10,000. A toilet with even just an imperceptible leak can waste 30 gallons a day or $75 a year.iv

<table>
<thead>
<tr>
<th>Size of toilet leak</th>
<th>Amount of water waste per day</th>
<th>Approximate cost of waste per day</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small</td>
<td>30 gallons</td>
<td>$0.33</td>
</tr>
<tr>
<td>Medium</td>
<td>250 gallons</td>
<td>$2.74</td>
</tr>
<tr>
<td>Large</td>
<td>Up to 4,000 gallons</td>
<td>As much as $44</td>
</tr>
</tbody>
</table>

*Table 1: Water loss and cost from leaks.*

2 THE COST OF LOST PRODUCTIVITY

For tenants, the greatest driver for creating a green and productive environment is the potential financial benefits of maximizing employee productivity. This makes sense, because the greatest cost to tenants is neither rent nor utilities, but payroll. The ratio that is widely cited to illustrate the order of magnitudes is:

- $3 per square foot for rent
- $30 per square foot for utilities
- $300 per square foot for payroll

The bottom line is that a 1% gain in occupant productivity output is worth a lot more than a 1% reduction in energy costs. This awareness is resulting in sweeping changes in the workplace. The transformation is also being driven by the need to attract and retain talent, and build in flexibility to accommodate different workplace solutions. Employee mobility, telecommuting, more short-term contract workers, and more teamwork and collaboration are creating a new set of expectations.
Aspects of the workplace help to define an organization’s culture. They also help to motivate and manage employees and conduct operations effectively. Workplace conditions can be a source of satisfaction or dissatisfaction, which in turn have an impact on productivity and employee retention.

WELL certification is creating a new buzz in the industry about the importance of health and wellness in the workplace. Just as LEED set new standards for sustainability, WELL certification will no doubt raise the bar and may one day be the new norm. At present, the cost of WELL certification makes it primarily a tool to differentiate a relatively small number of trophy buildings. But in the mainstream, it has brought the concept of wellness into the everyday conversation.

There are countless studies that quantify productivity in a healthy, comfortable and well-laid-out office compared to one that has poor acoustics, poor lighting design, insufficient daylighting, thermal discomfort, bad air or poor spatial layout. Here are some examples of the connections being made between workplace features, and productivity:

- Improved acoustics + 6% productivity
- Improved lighting, daylighting & views + 5.5% productivity
- Improved thermal comfort & ventilation + 5% productivity
- Reduced commuting + 11.5 days/FTE/year
- Improved ergonomics and privacy + 6% productivity
- Green workplaces vs. non-green + 16% productivity

If we consider payroll costs, which can run into the millions, the potential savings that can result from taking corrective action are staggering.

Skeptics may note that employee productivity can be difficult to quantify outside of a lab setting, and even more difficult to attribute to the workplace environment. That said, even doubters will acknowledge that some gains in productivity can be expected from upgrading a workplace environment. Clearly, productivity suffers when employees are too hot or cold, sleepy from lack of oxygen, distracted and irritated by noise, headachy from glare, exhausted from a tiresome commute, feeling isolated or depressed by drab surroundings. Obviously, over time, employees working in these conditions will be less concentrated on their work than those who enjoy a healthy, comfortable, dynamic and engaging environment.

The challenge is to accurately quantify the productivity gain that an organization can realistically expect from improving a workplace environment. Notwithstanding the tremendous claims that some studies make, if we scale down the productivity gains cited to just a fraction of what these studies show, the financial impacts of even tiny productivity improvements are immense. For example, consider the financial impact of taking corrective action in an open office environment of 25,000 square feet office with 125 employees, which has appalling acoustics. Suppose that by creating quiet zones, and acoustically separating some areas for small team meetings, we could reduce stress and distractions and improve productivity equivalent even by just 1% or 5 minutes per day per employee. If the payroll were $75 million, then this improved quality of work output would nominally represent $75,000.

The inherent value of healthy, comfortable and well laid out workplaces outweighs the operational savings from being green. And yet, even green savings add up when a portfolio-wide strategy is systematically applied. However, the greatest value of a green portfolio is that it reinforces the culture of sustainability, which permeates throughout an organization from senior executives to rank and file employees.
3 THE LINK BETWEEN A GREEN WORKPLACE AND EMPLOYEE PRODUCTIVITY

The concept of health, comfort and productivity gained traction around 2010 with studies suggesting that green offices are inherently more productive. This idea was somewhat dispelled when other studies showed that occupants in some green buildings found them noisy, too hot or too cold or poorly laid out.

While a direct, definite causal or correlational link between green and productive is arguable, there is no question that smart building technology is achieving a convergence: more energy efficient and sustainable building operations AND a more efficient and productive workplace. Intelligent systems can greatly reduce energy consumption of heating, cooling, lighting, elevators and so forth. Because they can be finely tuned, smart buildings also contribute to productivity. For example, smart building systems and processes make it easy for people to check in and out of workspaces or conference rooms. They enable the lighting, HVAC and plug load to turn on or off automatically and be adjusted by the occupants to suit their preference. Employees enjoy greater workplace choices and waste less time by being able booking spaces. They can even save valuable minutes by having audiovisual devices automatically set-up and ready.

Changing work patterns and a highly mobile workforce mean a greater need for hoteling and for spaces to be adaptable. Demountable walls, raised flooring, acoustical ceilings and furniture systems are complemented by adaptable HVAC, voice, data, power, and lighting. The result is a reduced environmental footprint, less space wasted and improved quality of space - all leading to greater productivity.

4 HOW TO MAKE A PORTFOLIO OF OFFICES MORE GREEN AND PRODUCTIVE

The challenge is how to make a large, diverse portfolio of offices more green, well and productive without having to:

- incur the costs of a mammoth portfolio-wide build-out
- undergo expensive certifications to validate that the offices are indeed Sustainable and Well
- hire expensive consultants

Green + Productive Workplace (G+P) is an online approach that is practical for a large portfolio and a fixed budget. G+P makes it fast and easy to gather and rinse through a large amount of data to identify where the pain points are, create a portfolio-wide strategy as well as an individual action plan for each facility in the portfolio.

When many diverse properties are involved, one of the first things to do is establish certain common policies and protocols. The first step of G+P, which takes only about 10 minutes, is to complete a Corporate Leadership assessment. The purpose is to highlight areas where certain policies, protocols and expectations may need to be better articulated, or communicated to the right people. Everyone, whether facility managers, business unit managers and employees, green teams, IT or HR, has their own role in creating the “office of the future.” An organization can better align its efforts when everyone knows exactly what is expected of them.

The next step in G+P is for the Facility Manager of each office in the portfolio to do a two-part assessment for their office. Part 1 looks at how green the facility is in terms of: energy, water, waste, use of resources, and so forth; Part 2, assesses office layout, and wellness criteria including acoustic, visual and thermal comfort, indoor air quality, ergonomics, amenities, and workplace wellness programs. Together Parts 1 and 2 together take approximately 50 minutes to complete. The output of G+P is a Portfolio Report that aggregates and analyzes the data from all the offices, compares the performance of offices in the portfolio, gives a nominal financial estimate of the energy that is being wasted as well as lost productivity due to poor layout, acoustics, thermal and visual comfort. The data is presented in a highly visual way, showing “red flags” backed up with financial metrics. The reports also provide a high level view of the performance, as well as allowing the user to zero in to more granular data. This makes it easy for the portfolio coordinator to propose a roadmap for the portfolio, and work with the Facility Manager to develop a detailed action plan for each facility. By highlighting where money is being thrown
away due to poor energy management, and by red-flagging where there may be loss of productivity due to employee discomfort, this makes it easy to identify priorities and take a phased approach.

Organizations that are not forward-looking in the way they manage their workplace portfolios will be left behind. Achieving a smart, green and productive workplace is not difficult. Primarily, it requires an alteration of attitude to view the workplace as an integral aspect of an organization’s overall efficiency and innovation and an attestation of the organization’s culture.

<table>
<thead>
<tr>
<th></th>
<th>Heating &amp; cooling</th>
<th>Lighting</th>
<th>Plug load</th>
<th>Server room</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Office A</td>
<td>-$800</td>
<td>+ $340</td>
<td>+ $2,000</td>
<td>NA</td>
<td>$3,140</td>
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<tr>
<td>Office B</td>
<td>+ $1,500</td>
<td>+ no savings</td>
<td>+ no savings</td>
<td>No savings</td>
<td>$1,500</td>
</tr>
<tr>
<td>Office C</td>
<td>+ $7,800</td>
<td>+ $44,230</td>
<td>+ $15,450</td>
<td>+ $6,270</td>
<td>$73,750</td>
</tr>
</tbody>
</table>

Table 2: Potential energy savings.

<table>
<thead>
<tr>
<th></th>
<th>Acoustic comfort</th>
<th>Visual comfort</th>
<th>Thermal comfort &amp; IAQ</th>
<th>Layout and amenities</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Office A</td>
<td>+ $200,600</td>
<td>+ no savings</td>
<td>+ no savings</td>
<td>NA</td>
<td>$200,600</td>
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<tr>
<td>Office B</td>
<td>+ $26,200</td>
<td>+ no savings</td>
<td>+ no savings</td>
<td>+ $56,120</td>
<td>$82,320</td>
</tr>
<tr>
<td>Office C</td>
<td>+ no savings</td>
<td>+ $159,900</td>
<td>+ $15,450</td>
<td>+ $6,270</td>
<td>$181,620</td>
</tr>
</tbody>
</table>

Table 3: Potential productivity gains (“reduced loss of productivity”).

REFERENCES

i Hewitt A, (2012), Employees at 'green’ companies are significantly more productive, study finds. UCLA Newsroom http://newsroom.ucla.edu/releases/study-certified-green-companies-238203

