Cut it Out!

Save for Today, Build for Tomorrow

was made possible by the following companies:

Steelcase

AcuityBrands®

JohnsonDiversey

SoCal Office Technologies

A Xerox Company

WOLCOTT

ARCHITECTURE | INTERIORS

THE URQUIZA GROUP, INC.

ARCHITECTURE . INTERIOR DESIGN

JONES LANG LASALLE®

Real value in a changing world

DCS Global Enterprise

Cut It Out!

Save for Today, Build for Tomorrow

Author Recognition:

Shad Arnold, LC, CLC, LS
Performance Lighting Systems

Janice Cimbalo, Esq., MCR
Senior Vice President, Jones Lang Lasalle

Diane Coles, MCR
Director, Workplace Services, SCAN Health Plan

Jennifer Corbett-Shramo, IFMA Fellow
Regional Vice President, DCS Global Ent.

Glenn Dirks
Director, Teletrips Inc.

Kelly Duke
Vice President, Pre-Construction Services, ValleyCrest

Edie Fee, MCR
Partner, iNPOINT Advisors

Charles Grantham, Ph.D.
Co-founder, Work Design Collaborative

Georgia Perkey
Managing Partner, iNPOINT Advisors

James Ware, Ph.D.
Co-founder, Work Design Collaborative

Matson Walter
Associate, Melendrez

An IFMA Foundation Publication

Houston, Texas

September, 2009

Foreword

Pat Turnbull

The IFMA Foundation is proud to present this publication, Cut it Out!, a reference guide for Facility Managers who are interested in achieving immediate operating cost efficiencies AND enhancing their sustainability or 'green' programs.. The Cut it Out! authors have done a marvelous job of capturing best-practice ideas and demonstrating the effectiveness of their subject matter with case studies, making this book a "must have" reference guide.

As a broad topic, operating cost efficiency is clearly important as businesses strive to redefine their strategies in this new economy. The book provides FM practitioners with insights into what they can do to lead organizations to more efficient and sustainable business practices. It also helps readers formulate and articulate TRIPLE bottom line benefits of environment, finance and people.

The IFMA Foundation, with its three pillars of Education, Research and Scholarships, is dedicated to expanding knowledge of the Built Environment and to advancing the Facilities Management profession. The IFMA Foundation relies solely on the generosity of people who believe in this mission and who are passionate about the facility management industry.

That is why we are asking that you get involved and consider the IFMA Foundation first on your list of options for charitable donations and in-kind giving.
With 81 cents out of every dollar that is donated to the Foundation going directly to programs that increase knowledge and education. There is no better investment for contributing to a more productive built environment and advancing the Facility Management profession.

In closing, I would like to give special thanks to IFMA Foundation Trustee Jennifer Corbett-Shramo, IFMA Fellow, ICE, who has provided exceptional leadership in championing the development effort for this book; to the team of authors who generously donated their time and knowledge; to Rob Fee and Derek Rusch for their incredible production assistance; to our sponsors for their generous support; and to Jim Ware, PhD, for his extensive editorial assistance—all of which made this book possible.

Together, we truly can build the future and create a better world!

Pat Turnbull, MA, LEED AP
President, Kayhan International
Chair, IFMA Foundation

Prologue

The current economic crisis is forcing all companies to cut costs and improve efficiencies wherever possible—and to do it quickly. Facilities managers are desperately looking for new and innovative ways to contribute to their organizations' improved health, to say nothing of survival.

At the same time, the commercial real estate industry is undergoing a significant transformation of its own. The profession is moving from managing long-term, fixed assets to provisioning dispersed networks of workplaces to support flexible, mobile patterns of work. Like other functional areas, the workplace must become a variable cost to the business. This new reality demands a radical new model of facilities management—one that not only focuses on cost effectiveness but also addresses environmental and community impacts.

This book is a roadmap and a guidebook for facilities managers who are helping their organizations make this transition. It is highly tactical, emphasizing what facilities managers must do today to begin moving their businesses into the future. It is information you can use right now to make changes in ten specific areas of facilities management. The book contains case studies, suggestions for operational improvements that can be implemented immediately, and a rich list of resources you can turn to for more information and ideas.

There are three major themes running throughout this book:

1. What can you do now to save money?

2. What capabilities do you need to start building for tomorrow?

3. How can facilities managers gain a voice in strategic facilities decisions?

We don't claim we have all the answers. Far from it. We see this new book as the beginning of a conversation among facilities management professionals about what they do, what they need to do, and how the profession must change, driven by economic forces much larger than keeping the lights on, cleaning the carpets, and provisioning cubicles.

Cut it Out!
Save for Today, Build for Tomorrow

Table of Contents

1 Chapter One
Strategy: Building a Sustainability Plan

This chapter helps you take the first step towards making a significant difference in your business. It is your introduction to the whole book, in which we lay out the pathway and describe a new way of thinking about facilities management.

As you read through this book you will notice some commonalities across the various chapters. We always provide detailed information about how to save money today; we always include suggestions about things you can do for tomorrow; and you will always find ideas about making your job as a facilities manager more strategic.

Edie Fee sets the stage here by describing just what Sustainability (with a big "S") is, and how fundamental it is to surviving this year, let alone the longer term. Then she offers the step-by-step guide to getting a Sustainability Plan in place, and she closes with an overview on building the business case to help you sell your ideas to senior management (about which there is much more in the closing two chapters). So take a deep breath, relax, and enjoy the journey

Edie Fee, MCR
Partner, iNPOINT Advisors

The Idea In Brief

- Achieving operational efficiencies results from the development of a Sustainability Plan that considers the employees, the physical and business operations of the facility, and the environmental consequences of the programs implemented.
- A Sustainability Plan is an enterprise-wide undertaking that has stakeholders both within the organization and its community of providers and regulators.
- The Sustainability Plan drives multiple corporate projects / initiatives that will yield the resulting savings.
- The Sustainability Plan is a living plan that should be updated annually based on actual results and new opportunities.

Chances are, the reason you are reading this book is because you have been given a mandate to reduce your building operating costs. You may be saying to yourself, "Where do I begin?" You no doubt see that mandate as quite a challenge, especially if you are already running what you consider to be an efficient operation.

Well, the good news is that we are going to provide you with many opportunities to find additional cost savings. Some may be very straight-forward—what many call "the low-hanging fruit" — and some may take more planning and some capital investment.

The Idea at work

In this chapter we will describe how to develop a "Sustainability Plan" for your building operations. In this case, we are defining "sustainability" in a sense much broader than mere energy efficiency. We are going to focus on the "Triple Bottom Line," which emphasizes sustainability of:

- People—sustaining relationships with those in your organization, your community, and all of the suppliers you use;
- Planet—sustaining the global environment;
- Profit—sustaining the business viability of your organization.[1]

We are going to give you a roadmap for evaluating the different ideas and developing a plan that gets you the best results for your organization. Other chapters in the book will give you details on many specific kinds of initiatives/projects you can consider; we also include many case studies to give you real-world examples. These examples will be valuable to you in exploring what projects would make the most sense in your organization, and in selling your plans to senior management. Then, finally, we will provide you with a methodology for determining how to evaluate which projects you should undertake and which will give you the best payback.

A Model for Developing Your Strategy

Whether you are a tenant, a landlord, or an owner in an owner-occupied building, the process you should follow remains essentially the same. The difference will be the stakeholders and what is in your scope of responsibility.

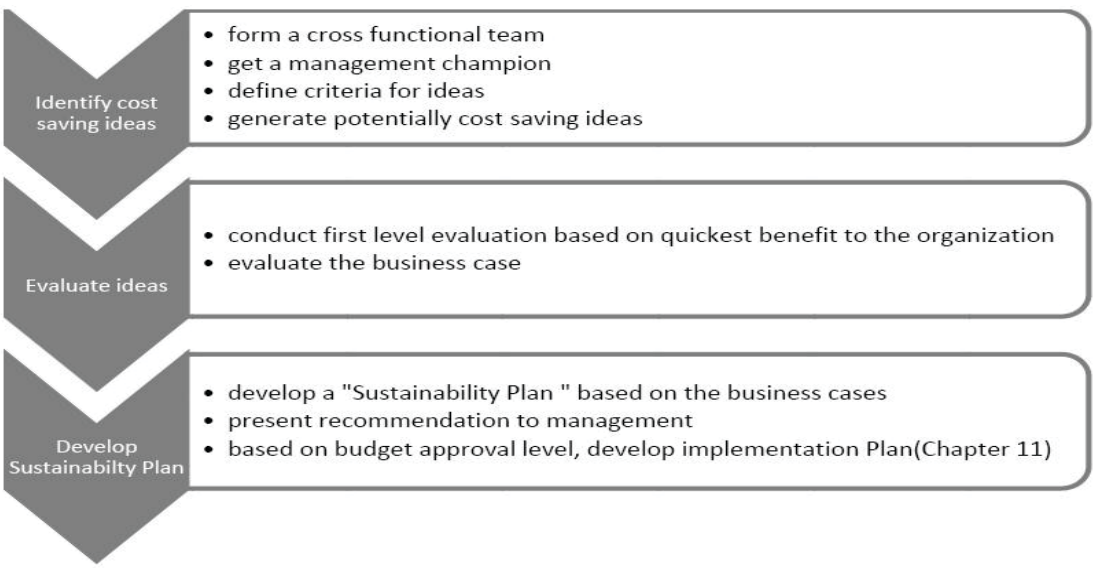
- If you are a tenant, you will have limited ability to make changes to the physical building. You will need to work with your property manager or owner to encourage him or her to make the changes you want to implement. The point in time when you can exert the greatest influence is when you negotiate your lease.
- If you are a landlord, you are bound by your lease agreements. Likewise, you will have limited influence over your tenants unless you incorporated provisions within your leases that give you flexibility and/or control. Fortunately, your tenants should be pleased by a reduction in operating costs as a result of your efforts, so you will more than likely have cooperative and willing tenants.
- If you are an owner in an owner-occupied building, you clearly have the greatest flexibility to implement changes because they will all be under your own control. However, you will face many of the same challenges in getting the stakeholders in the various departments to be willing to participate.

Figure One, below, illustrates the strategy we will be exploring to help you develop your Sustainability plan. As you can see, there are three distinct phases:

1. Identify your cost saving ideas
2. Evaluate the Ideas
3. Develop the Sustainability Plan

At the end of this process, you will have an enterprise-wide Sustainability Plan identifying numerous initiatives/ projects that can be undertaken by your organization. If you follow our suggestions you will also have timelines and a budget, plus management endorsement. You will have an action plan that can serve your organization for many years to come, enabling you to continue to contribute to the improvement of your organization's "Triple Bottom Line."

Figure One: Strategy for Developing Sustainability Plan



Who's Involved?

Your first consideration in developing a plan is to define the sphere of influence that your plan will encompass—who and what is involved. Ask yourself, "If I undertake a project to make some improvements in the building operations, who might those changes affect?" Consider the list below:

- Facilities. This is the group of people that will have to evaluate the viability of the idea, determine how to measure the benefits, see that the project gets done, and then ensure that the benefits are achieved.
- Real Estate. These are the people who will have to include certain provisions into your leases, whether you are the landlord or a tenant, to ensure that you can achieve your goals. They will also need to determine if your ideas can be implemented within the constraints of the current leases.
- Legal. The team that will need to work with you to develop and then ensure that all the provisions of your various service/provider contracts are specified and adhered to.
- Human Resources. The team that will work with you to review and/or redesign business practices that might impact the employees.
- Operations. The group of people that will work with you in those instances where you may need to change business operations and practices.
- Finance/Accounting. The group of people that you will want to assist you in evaluating your current costs, developing metrics for monitoring new cost savings, and then monitoring the actual results. This group will also give you guidelines for how management will want to analyze each idea financially.
- Information Technology. The team that provides and manages the technology platforms that support everyone else's work.
- Marketing/Sales. The group of people who promote your company and sell its products. They may want to promote your sustainability efforts as part of their marketing efforts.
- Senior Management. The team of people you will need to endorse and support the policies and practices that you recommend.

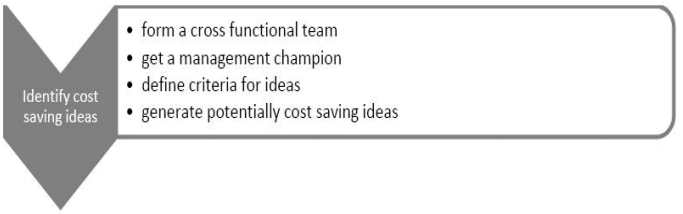
That is just the typical list of the partners and supporters you need within your own organization. Now consider those outside of your organization:

- Your Landlord- (if you are in a leased premises) This person or team has control over what you can do in your building.
- Your Tenants- (if you are a Landlord) You may be making changes that could affect business operations of your tenants. You have certain obligations/ limitations based on your lease(s) with them.
- Your Service Providers—this team of people will be critical in helping you achieve your objectives. You will have to negotiate changes in your requirements with them, and you may be changing the way they provide the service and their accountability to you.
- Local Governing Authorities—new codes, policies, and legislation are being introduced almost daily, especially as it relates to energy efficiency. You will need to be aware of any new requirements and ensure that all of your policies and procedures conform to them.
- Your Utility Providers—your relationship with them will now become more involved because you will be relying on them to give you more data and additional monitoring than you most likely ever needed before.
- Your Suppliers—you may now be requiring different kinds of products than you previously used; you will be making demands on your suppliers that their products meet additional conditions beyond those you previously required.

Where Do You Begin?

The first step of building your strategy, as shown in Figure Two, is to identify some cost-saving ideas. You will begin this process by forming a cross-functional team of the stakeholders.

Figure Two: Identify Cost-Saving Ideas



How Will These Stakeholders be Involved?

You will want to include as many of the stakeholders listed above in your planning as you can. The best way to do that is to create a "Task Force"—a group of people representing as many of the stakeholder groups listed above as possible. These people do not necessarily have to come from management. The role of the Task Force will be to give you ideas and feedback, as well as to help build understanding and support across the organization.

The most important thing about the people selected for the Task Force is that they be individuals who are in touch with what is going on and whose opinions are well-respected across the whole organization. You most likely will need the help of your management to get approval for forming the group and for recruiting candidates, but the more stakeholder groups you can have involved, the better your planning will be.

You will also need to find a management champion, or sponsor. A champion is someone who will "endorse" the importance of the Task Force and the work that you are doing. Your sponsor should also be the person who will be willing to carry your ultimate plan to the appropriate level of management for approval and funding. You and your manager should decide together who this sponsor/champion should be, but the higher in the organization he or she is, the more comprehensive your plan can be—and the more likely it will succeed.

Be sure to keep your champion, the whole chain of management up to that person, and all of your Task Force members constantly informed about the activities of your Task Force and the challenges you are confronting. You should designate someone to keep minutes of each Task Force meeting, and publish them widely. The meeting minutes will be a powerful communication tool for you.

Work with your direct management and your management champion to identify who will be on the Task Force. Ask the management champion to assist in getting permission for the prospective members of the committee to be involved. Explain that you will have periodic meetings where these people will be giving you input, and you will be brainstorming cost-saving ideas with them to evaluate the impacts those ideas might have on their organizations. Emphasize to everyone that the Task Force is an advisory committee; it will have no authority to make final decisions.

You are going to be like a Pied Piper in your organization. As you search out ideas to cut costs, you will need to involve more people who are outside of the facilities organization. Knowing that, you might as well bring the larger group together from the beginning.

What Will the Time Commitment Be?

Below (Figure Three) is a sample timeline for the Task Force activities. Each meeting should last no more than 1 ½ hours. You should designate a facilitator and someone to take minutes.

Figure Three: Sample Timeline

Week 1	Introductory meeting – introduce committee members to each other, review the group's purpose, and send them off with a goal to look at cost savings ideas as they relate to your building and operating practices. Define criteria that will be used to consider and evaluate ideas.
Week 2	Members come back with ideas; document and begin to brainstorm. Verify that the various ideas fit the criteria defined previously.
Week 3	Continue brainstorming; add ideas.
Week 4	Evaluate ideas against criteria; Develop a list of the top "XX" ideas (pick the right number for your situation). Assign ideas to members for further evaluation.
Week 6	Further review of feedback; Refine list of top XX ideas. Assign members to assist with developing the business case for each idea (see Chapter 10 for guidelines on developing a business case).
Week 10	Review preliminary business cases; determine updates needed. Develop cash flows.
Week 12	Review updated business cases; develop preliminary Sustainability Plan.
Week 13	Develop plan document; circulate it among Task Force members for comments and feedback.
Week 15	Review and update Sustainability Plan per feedback
Week 16	The management champion presents the Sustainability Plan to decision makers for approval

As soon as the Task Force has been established, ask your management champion to send out a communication to the entire organization announcing the formation of the Task Force and its role. Below is a sample of what that communication could look like.

Figure Four:
Sample of Management Letter to Announce Task Force

TO: All Employees
FROM: [Sr. Management]
SUBJECT: Formation of a Sustainability Task Force
In these difficult economic times it is important that we make every effort to find ways to improve our operating efficiency. In order to have participation across our organization, we are forming a Sustainability Task Force that will work with [name of Champion] to develop a Sustainability Plan for us. This plan will focus on projects/ Initiatives that will allow us to improve our "Triple Bottom Line":

PEOPLE – sustain the relationships within our organization, with our community, with our providers, and with our customers.
PLANET – sustain the global environment
PROFIT – sustain our organization's business viability

Individuals throughout the organization have been selected to participate in this important advisory group. The ideas they generate will drive our future sustainability effort.

The following individuals will be serving on the Task Force:
- *[name]*
- *[name]*
- *:*
- *[name}*

After this announcement is sent, the Task Force Chair should follow it with an e-mail to each of the Task Force members. Their management should have already advised them that they have been selected. Be sure to copy the manager of every team member as well. Note: for the purpose of this chapter, we are assuming that you are the Task Force Chair.

Figure Five: Initial e-mail to Task Force Members

TO: distribution (Sustainability Task Force)
FROM: [name of Task Force chair]
SUBJECT: Welcome to the Sustainability Task Force
Welcome to each of you to the Sustainability Task Force.

As each of you read in the introductory message from [Sr. Management}, the purpose of our Task Force is to develop ideas that can improve the operational efficiency of our organization.

Our first meeting has been set for [date] [time] [place].

Below is the agenda for the meeting:

- *Introductions*
- *Review of the Task Force Purpose*
- *Guidelines for ideas*
- *Review of Time-line for development of Sustainability Plan*
- *Open discussion*

What Will the Ground Rules Be?

Before you meet with the Task Force, you will need to establish ground rules that will guide the committee in determining the criteria that are to be used for evaluating the ideas that the group will generate.

The ground rules are the criteria that you, your management, and your management champion agree will serve as the defining constraints within which you must operate. These ground rules can take many forms. Here are some examples:

For an idea to be considered, it must:

- have a payback that exceeds the cost to implement;
- produce a payback in less than two years;
- require an up-front cost that does not exceed $10,000;
- continue to accrue benefits for more than five years;
- not violate any of our contractual agreements;
- have the approval of our landlord;
- have approval by all affected departments prior to implementation
- (for ideas related to energy/water usage) reduce the amount of energy/water used relative to current operations.

These guidelines will become the overarching policies that will drive the ideas that the group considers and ultimately recommends for implementation. For this reason, it is important that the parameters and timeframes you set are both realistic and practical for your organization.

Week 1: Introductory Meeting

The agenda for the first meeting is shown in Figure Five above.

How Will You Develop Cost-Saving Ideas?

One of the best places to look for cost-saving opportunities is your operating budget. You will want to look at each line item and ask yourself, "What could we do to reduce this cost?" All the stakeholders should look at their own respective budgets in this way. Answering this question is best done in a brainstorming environment where everyone's ideas, no matter how bold or "crazy," can be considered fairly and then evaluated later. What you most likely will find is that the changes you are exploring will affect not only your department but other departments in your organization, as well as service provider and vendor teams external to you.

Before you attend the first brainstorming session of your Task Force, spend some time with your own departmental staff and begin trying to identify some opportunities within your area as well as elsewhere in the organization.

Below is a starting list for you to consider. These are things that are frequently done by facilities organizations to reduce costs.

Area	Idea	Background
Architectural agreements	Develop a typical layout for your facility: get an agreement with an architectural firm to handle your layouts; Use a typical or "standard" design so you can reduce design costs	Along with standard FF&E, a standard design is more cost-effective More on this in Chapter Five.
Building lighting	Change out all lights to T8	There are significant savings by changing out lighting. T8 bulbs last longer, are cooler, and use less energy. See the details on this idea in Chapter Seven.
Capital Budget	Replace equipment that is at the end of its useful life. Conduct a life-cycle assessment of your equipment	Your service provider can assist you in determining how much useful life you have left in your equipment. It does not pay to keep repairing a device that is approaching the end of its useful life. Also, the replacement equipment will more than likely be more efficient.
Carpeting	Change to carpet tiles with recycled product in the backing	This action will reduce the cost of replacement repairs. Also, you can arrange to have the provider take back used tiles for recycling.
Cleaning products	Change to green cleaning products	This change will be highly cost-effective and create a healthier environment for the employees. More on this in Chapter Eight.
FF&E	Standardize all furniture, fixtures, and equipment; select products with recycled content and no off-gassing	By standardizing, you can get better buying power, interchange products and simplify repairs and replacements. Using recycled content is environmentally friendly. More on this in Chapter Five.
Fleet	Eliminate or outsource	Maintaining a fleet can be quite expensive; look at options.
HVAC maintenance	Install filter sensors; change filters as needed	Not only can you save costs on filters by changing as needed, but you can extend the life of the HVAC unit by changing the filters more frequently.
Individual office equipment	Do not leave equipment on stand-by when not in use; turn it off at night	Computers, copiers, and small printers consume considerable energy if left on. Remove small refrigerators and individual fans/ heaters.
Insurance	Ask your insurance provider to evaluate whether any of your cost savings will reduce your rates	Improving the quality of your equipment, and its maintenance, can reduce the risks of a casualty loss in your building.

Area	Idea	Background
Janitorial	Update the scope of services for janitorial work. Review the performance standards that have been defined. Standardize and make sure the services you are requiring are needed at the frequency being provided. Develop one standard and use it for all facilities, if appropriate.	Often, services are being provided on a schedule rather than as needed. For example, the lobby floor may not need to be mopped every night. Meet with your provider to identify how you can reduce costs. For them it's also about using fewer man-hours.
Kitchen and landscaping waste	Create a compost pile of lawn clippings and kitchen waste (e.g., coffee grounds)	This will reduce your waste hauling and you can sell or use the resulting compost.
Landscaping	Outsource	If you have multiple facilities, try to outsource on a regional basis. More information in Chapter Four.
Low flow water faucets	Change out faucets in all lavatories	This will have considerable water cost savings.
Maintenance Contracts	Update scope of services on maintenance contracts. For each maintenance contract in place, review the services to make sure you are maintaining equipment on an appropriate cycle.	Each item of equipment has a recommended maintenance period, often dictated by the warranty requirements. Many times warranty information is not monitored and repairs are paid for equipment under warranty. Also, some items are replaced more/less often than needed (e.g., filters on HVAC). More on this idea in Chapter Eight.
Maintenance management	Implement a Computerized Maintenance Management System (CMMS) if you don't have one; establish Key Performance Indicators (KPIs)	CMMS systems give you the information you need to know how effective your maintenance program is. Your vendors and service providers can be helpful in defining appropriate operating parameters and resulting Key Performance Indicators (KPIs). A CMMS system can also help you track warranties to ensure that you are performing warranty service and are not needlessly paying for unneeded services. A CMMS will also be a valuable tool to ensure that you are performing preventative maintenance on appropriate schedules to optimize the performance and life of your equipment.
Motion Sensors	Replace light switches and faucets with motion sensors.	This action usually has a very short payback with continued savings: "low hanging fruit."
Office supplies	Centralize inventories	Considerable cost can be avoided if individuals do not maintain their own supply inventories.

Area	Idea	Background
Operating Hours	Reduce building operating hours	Not operating a building on the week-ends can save considerable costs; technology today makes it more practical for employees to work remotely after hours. Consider free-standing heating/cooling units that can be used by individual occupants after hours.
Paint	Use low VOC paint	This action improves the air quality of the workspace.
Paper products	Use recycled paper in copiers and printers.	This action reduces cost and is more environmentally friendly. More on this idea in Chapter Nine.
Personnel	Reduce staffing. Look at what each person does, review their job duties, and identify if any of the things being done could be omitted.	Personnel costs are a significant part of your budget. A reduction of even one FTE can generate a significant savings. Also, some functions can be outsourced at a lesser cost than having a full-time dedicated employee. Example: reduce a layer of management
Pest control	Change to "as–needed"	Consider changing your janitorial contract to perform pest control on as as-needed basis; different environments have different needs. In addition, install bird deterrents if you have bird problems; droppings get into HVAC; on the ground, droppings encourage insects.
Preventative maintenance	Review the PM schedule on all of your equipment; verify that the time frames are appropriate	Performing PM too often is a wasted cost; not often enough will cause your equipment to deteriorate. Sensors now exist to make it easier to determine when equipment needs to be serviced. Properly maintained HVAC can be a big energy cost savings. See more in Chapter Six.
Roof	Cover roof surface with highly reflective polymer	This reduces the heat absorbed by the building and saves HVAC costs.
Security	Outsource and use remote monitoring	Security is an area where you can often save considerably by outsourcing.
Small office equipment	Reduce the number of individual printers/copiers	This idea will also reduce the inventory of toner cartridges you will need to keep available.
Temperature settings	Adjust thermostats to keep space warmer in summer and cooler in winter	This action may also require a change in the organization's dress code (e.g., more casual wear in summer). Also, consider a change in operating policy if the outside temperature falls below a certain point or exceeds a certain point; you may ask the company to consider a work-at-home day to reduce building heating or cooling costs. Evaluate the cost to heat/cool on an extreme temperature day.
Warehousing	Eliminate wherever possible. If you have a product that you know is not going to be used within the next six months, get rid of it	Warehousing is seldom-cost effective. It costs to ship something to the warehouse, to store it, and then to ship to an ultimate location. Unless you have a product that is difficult to obtain (e.g., a chair with discontinued fabric that you still use in many locations), dispose of it.
Waste hauling	Introduce recycling	If you reduce the amount of waste you produce, you can negotiate lower costs with your janitorial or waste hauling service.
Waterless urinals	Change out your current urinals to these devices	Considerable water savings will accrue.

Week 2: Begin Brainstorming Ideas

You will bring your list of ideas to the next Task Force Meeting. At this point the objective is just to get the ideas on the list. You may find that other departments may have some of the same ideas.

During this week's Task Force Meeting the initial idea list should be developed and then the Task Force will briefly review each idea to make sure it meets the preliminary guidelines. Those not meeting the guidelines should be moved to a deferred list and reconsidered the next time the plan is updated.

As you can see, the list of ideas can get long, especially when you combine your list with that of other departments. The important thing is to get the ideas captured so they can be seriously considered and possibly implemented.

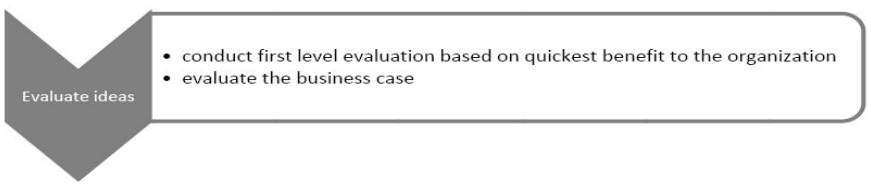
Week 3: Continue Brainstorming

After the first brainstorming meeting you will want to review the list of ideas with your facilities team to see if they have any additional ideas. Most likely the new items on the list will trigger additional ideas. Bring these additional ideas to the Week 3 meeting. During the Week 3 meeting the Task Force will repeat the process from the Week 2 meeting (i.e., add ideas, review them according to the ground rules).

The Task Force should always be open to new ideas but they should now be tabled for future updates to the plan unless there is a compelling reason to add them. The Task Force now needs to begin further evaluation of the ideas on the list.

Weeks 4 - 5: Evaluate Ideas

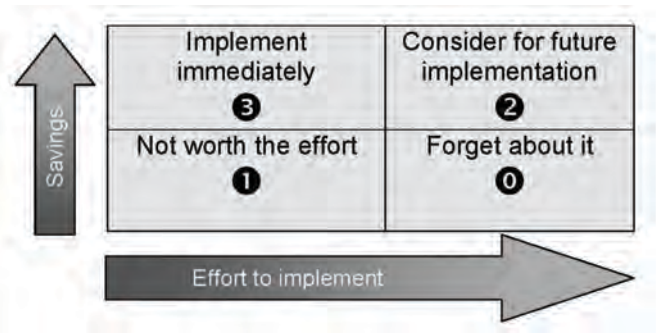
You are now ready to begin the next phase of the strategy—to begin evaluating ideas
.Figure Five: Idea Evaluation



After the ideas are identified in the Task Force meetings, the group will collectively begin to do a preliminary evaluation. You will want to consolidate similar ideas and develop a master list. Then the group can apply the ground rules to determine if any of the ideas should be eliminated immediately. In some cases you will not yet know the cost or payback so you will want to delay making a final decision. For this preliminary review, rely on your gut feel to determine if the idea should stay on the list or not (in consultation with the other Task Force members and their gut feelings, of course). After the review by the Task Force, update the list of candidate actions to reflect the group's combined judgment.

The next step will be to prioritize the items on the list. One approach you can use is to use a four-point rating system depending on which quadrant in the chart below the idea falls into. The higher the point score, the higher the priority.

Figure Six: Initial Evaluation Matrix



This evaluation technique uses the potential savings and the anticipated amount of effort needed to implement the idea as criteria for determining which ideas to evaluate in more detail.

The ideas with the least savings and the greatest effort to implement fall in the lower right quadrant, which we have labeled "Forget about it." At this point in your evaluation you are looking for quick paybacks. Ideas that fall in this quadrant could to be raised again for future updates of the plan, but for the first set of ideas, these are not ones you

want to spend any time considering.

Ideas with only small potential cost savings and a low rate of payback are also of low priority at this early stage. It is better to focus on bigger opportunities in the first version of your plan. Again, as suggested above, do keep track of these ideas because there may come a point in the future when it will make sense to evaluate some of them further.

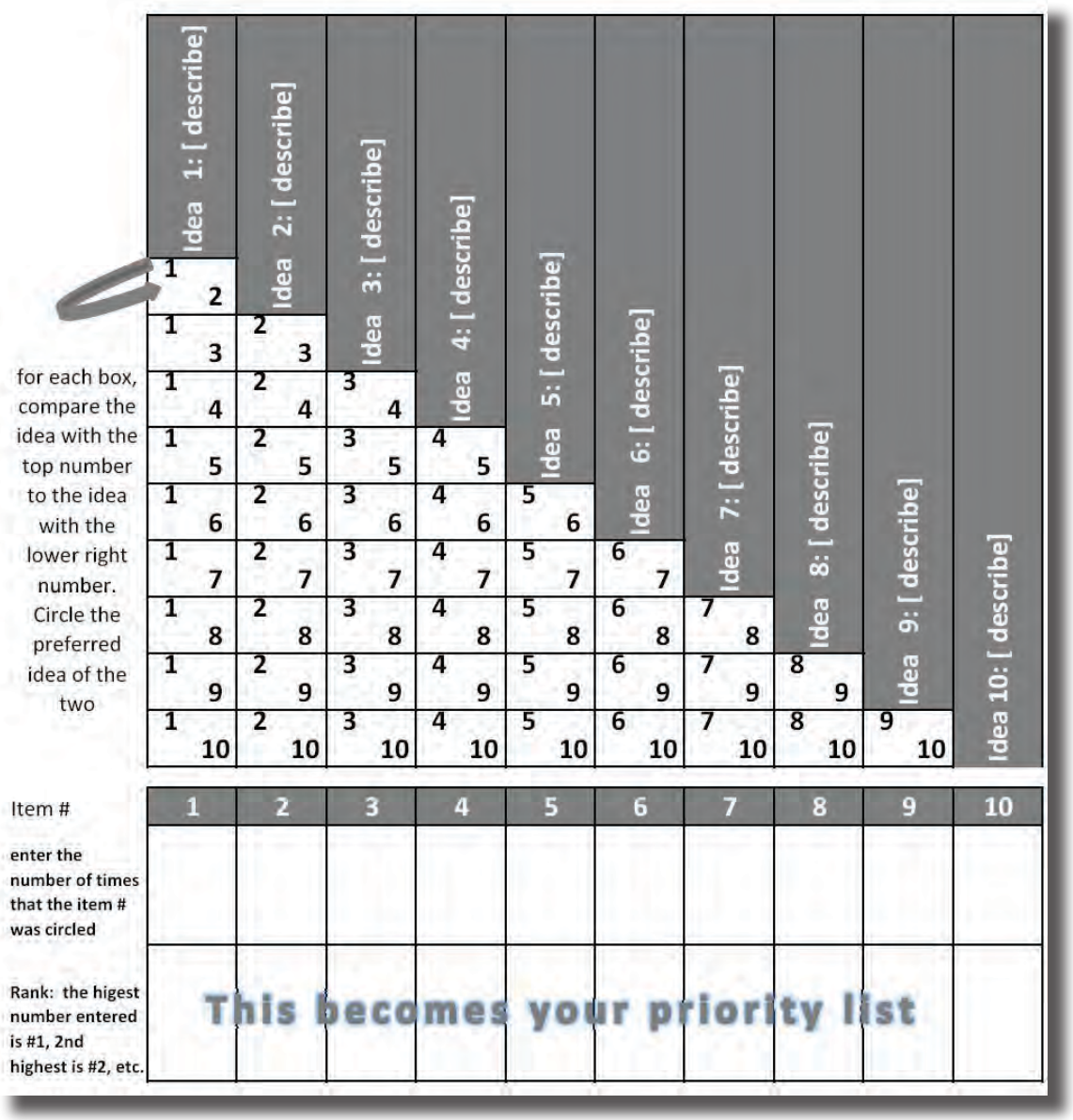
The ideas you want to focus on now are the ones that have the greatest potential savings. Some may also take less effort than others. These are the ideas that fall in the upper left quadrant of the matrix; we give them the highest score of ❸ because they have the greatest potential of giving you a quick boost in cost reduction.

The ideas that take more effort but still have an anticipated high savings potential fall in the upper-right quadrant and are given a score of ❷. They should still be considered because of their high savings potential.

Because these preliminary evaluations are made with relatively little information, periodically you should review where you placed each idea within the matrix, or as you gather more information, to make sure you are not missing something in your plan that has a high savings potential.

Another way to look at your ideas is to compare them side-by-side. Below is a proven technique for prioritizing ten ideas:[2]

Figure Seven: Idea Ranking Matrix



You can extend this technique to as many items as you want to compare. Whichever technique you choose to use, you now need to evaluate these ideas in greater detail.

Chapter 11 provides a methodology for evaluating each idea to determine its true value and impact. You will of course need to do some research to compare current costs with estimated potential cost savings. In some cases gathering this data will require a cross-functional team of people to contribute to the analysis. That effort may also require support from people not on your Task Force.

Weeks 6 – 9: Further review of Ideas

At the meeting of the Task Force in Week 6, each person assigned to look at the ideas will present the results of their initial evaluations. This first level drill-down into the ideas will most likely change some of the expected benefits. Therefore, after the Task Force reviews the information, they should re-prioritize the list of items based on the guidelines.

An important decision will now be made by the Task Force. It will now need to decide which ideas remain on the list for more detailed analysis and for consideration to be included in the Sustainability Plan.

After you have developed the revised prioritized list of cost-saving ideas, you are ready to conduct a more detailed analysis. Management support will often be needed to get resources assigned to the effort. This is where your management champion can be helpful. The list of ideas to be evaluated should be reviewed in detail with the champion, identifying in particular any ideas requiring cross-functional support.

Because it may take some time to identify the appropriate participants and to get their time to assist in the analysis, we estimate it will take about four weeks (weeks 6 – 9) for this portion of the analysis. The Task Force should identify what functional areas should be involved in the evaluation and identify a lead person to coordinate the evaluation. This person will need to "bird-dog" the effort among the different functional groups and the other individuals assigned to assist with the effort.

Chapter Ten describes how to prepare a business case for each idea. Using the techniques described there, you will be able to develop the following information about each idea:

- current cost of doing things the way you currently do;
- up-front costs needed to make the change;
- ongoing costs of the change;
- other resources (e.g., personnel) needed to make the change happen;
- anticipated savings as a result of the change;
- how long it will take to implement the change;
- the amount of time it will take to recapture the upfront cost (the payback period); and
- the potential on-going savings

As a result of this analysis, you will have all of the information you will need to present the ideas to management and develop your Sustainability Plan.

Weeks 10 - 11: Review business cases

Having the key information about each idea, you now have better information to develop a prioritized list. You now want to review your ground rules again and lead the task Force to develop updated criteria for evaluation.

Your revised criteria might be to group the ideas as follows:

Priority 1: Any idea that has a payback in less than 6 months

Priority 2: Any idea that has a payback in less than 12 months

Priority 3: Any idea that reduces headcount

You will then want to prioritize further, this time within each priority group, so that your list is truly in priority order, based on what the Task Force recommends.

You will then prepare a cash flow showing the cumulative effect of each recommendation. Create a single cash flow summary for the top priority items that your Task Force feels are “no brainers.” That is, for projects that have such an obvious benefit that it is clear to everyone they should be done. Each idea in the cash flow summary should include the following line items:

- Cost
- Cumulative cost
- Savings
- Cumulative Savings
- Net Benefit
- Payback (years / months)

Your task force members will need to work with the various stakeholders to develop reasonable cost estimates. This is a point where you will all have to agree on a common and appropriate level of detail. This summary is not intended to be a project plan; it is just a high-level view that is realistic and of sufficient detail to give your team confidence that you can recommend it to management. After approval, this effort will become a formal project and there will be further analysis of the idea.

Figure Eight: Cash Flow Summary Examples

Idea 1 - Quick Payback	0	1	2	3	4	5	Total
Cost	$ (2,000)	$ (500)	$ (500)	$ (600)	$ (700)	$ (800)	$ (5,100)
cumulative cost	$ (2,000)	$ (2,500)	$ (3,000)	$ (3,600)	$ (4,300)	$ (5,100)	
Savings	$ -	$ 4,000	$ 3,000	$ 3,200	$ 3,400	$ 3,600	$ 17,200
Cumulative Savings	$ -	$ 4,000	$ 7,000	$ 10,200	$ 13,600	$ 17,200	
Cumulative benefit	$ -	$ 1,500	$ 4,000	$ 6,600	$ 9,300	$ 12,100	$ 12,100
Payback (years)	NA	0.63	NA	NA	NA	NA	1.48
Payback (months)							18

Where the cumulative benefit turns positive, this is the (cumulative benefit / cumulative savings) plus the number of prior years

this is a better number when the costs and savings vary each year, but reflects straight line costs and savings

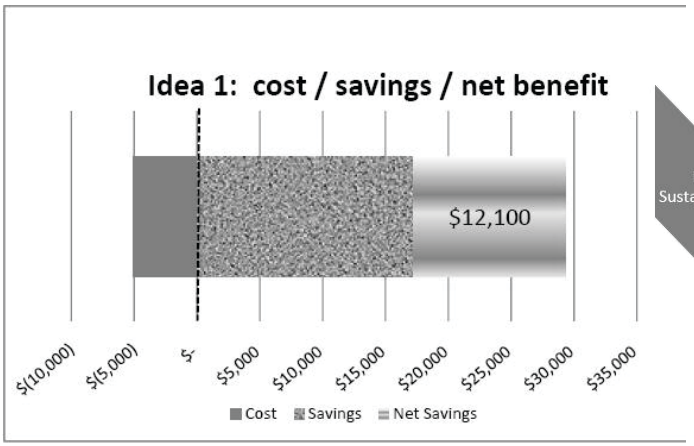
Idea 2: Slower payback	0	1	2	3	4	5	Total
Cost	$ (5,000)	$ (4,000)	$ (1,000)	$ (1,000)	$ (2,000)	$ (2,000)	$ (15,000)
cumulative cost	$ (5,000)	$ (9,000)	$ (10,000)	$ (11,000)	$ (13,000)	$ (15,000)	
Savings	$ -	$ 2,000	$ 3,000	$ 4,000	$ 5,000	$ 6,000	$ 20,000
Cumulative Savings	$ -	$ 2,000	$ 5,000	$ 9,000	$ 14,000	$ 20,000	
Cumulative benefit	$ -	$ (7,000)	$ (5,000)	$ (2,000)	$ 1,000	$ 5,000	$ 5,000
Payback (years)	NA	NA	NA	NA	3.93	NA	3.75
Payback (months)					47		45

Idea 3 - varied cost and benefit stream	1	2	3	4	5	Total
Cost	$ -	$ (10,000)	$ (12,000)	$ (14,000)	$ (16,000)	$ (18,000)	$ (70,000)
cumulative cost	$ -	$ (10,000)	$ (22,000)	$ (36,000)	$ (52,000)	$ (70,000)	
Savings	$ -	$ 20,000	$ 3,000	$ 22,000	$ 5,000	$ 26,000	$ 76,000
Cumulative Savings	$ -	$ 20,000	$ 23,000	$ 45,000	$ 50,000	$ 76,000	
Cumulative benefit	$ -	$ 10,000	$ 1,000	$ 9,000	$ (2,000)	$ 6,000	$ 6,000
Payback (years)	NA	0.50	NA	NA	NA	NA	4.61
Payback (months)		6					55

You will note that the payback estimate varies depending on whether the savings and costs are uniform over the period. For this first cut, we recommend a very simple approach to calculating the payback (i.e., assuming straight-line costs and savings), as we show in the example. After you have refined the priority list, you should meet with your finance department to discuss the approach they want you to use.

Another way to illustrate each idea is to use a (stacked) bar chart like the one in Figure Nine, where the bar illustrates the costs, the savings, and the net benefit.

Figure Nine: Cost/Savings Example



Week 12: Develop initial sustainability plan

At the week 12 meeting, the team will now prepare the first draft of the actual Sustainability Plan.

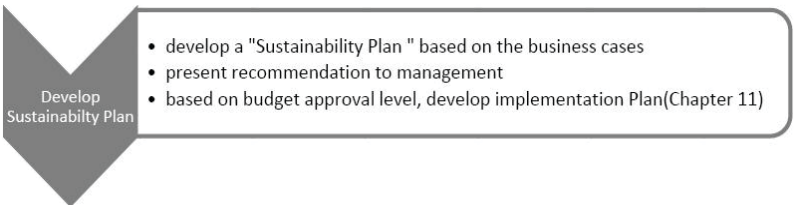
Based on the feedback from your finance department, the Task Force should now develop a format for presenting the proposals to management in priority order. For each idea included the plan should show:

- the costs
- the savings
- the net benefit
- the payback

The plan should also show the cumulative effect of the ideas at various levels of recommendation. Thus, if the Task Force thinks the first ten ideas should be implemented, there should be a summary at that point showing all of the costs and savings up to that point, along with the net savings and the combined payback.

You will want to include several levels of recommendation because you want to give management a full picture of savings opportunities at different budget (cost) levels. You will also want to show the cash flow impact by year, because some of the savings may offset costs that occur during the course of executing the idea. In this case, you may only need budget approval for the actual out-of-pocket costs.

Figure Ten: Develop the Sustainability Plan



Weeks 13 - 14: Feedback on initial sustainability plan

After the Week 12 meeting, you, as the Task Force leader, will need to spend Week 13 consolidating the ideas and developing the document that will go to management. Try to prepare the document as soon as you can after the meeting so that you can send it back to the Task Force for review in a timely manner. They will need some time before the next meeting to review the document.

At the Week 13 meeting, review any feedback that you receive from the Task Force and finalize the updates.

You will now send the plan to the management champion for review. He or she will most likely have a sense of budget levels and recommendations that will be acceptable to management. Meet with her/him to review any comments and incorporate them into the plan document.

You may need to go back to some of the task force members to get more information or clarification,

Prepare the updated plan and circulate it to the Task Force with an explanation of the changes so that they have time to review the current version prior to the next meeting.

Weeks 15: Develop updated sustainability plan

Week 15 is the last chance that the Task Force will have to look at the plan before it is presented to management. You will review the changes and discuss any issues or concerns with the Task Force. You will also want to review the format of the recommendation document with the team.

In addition, the management champion may want you or some members of the team to present the plan to management yourselves. At your meeting with the champion you will need to discuss and finalize how that will work.

Following the meeting, update the presentation materials, review them one more time with the management champion, and then prepare the final presentation and any accompanying materials.

Weeks 16: Present sustainability plan to management

During Week 16, the management champion and you and part of your Task Force (based on direction from the champion) will present the plan to senior management. This is the point at which the process moves from planning to implementation. Your Task Force has done its work and now, based on the level of funding, the ideas will become projects.

The Task Force Work is Done at This Point

Projects may be assigned to a single department (for example, the facilities department would be assigned a project related to changing out lighting). However, there may be some projects that are cross-functional (such as changing the way printers are used/assigned). It will be up to the management team to decide how they want to assign and carry out those kinds of projects.

Chapter Eleven describes the project management process and how the approved projects can be most effectively implemented.

As part of the follow-up process, the Sustainability Plan should be reviewed at least once a year. It should be reviewed to determine whether the planned benefits have been achieved and whether additional ideas should now to be considered. The process can be repeated periodically; deferred ideas can then reconsidered and new ideas can evaluated as well.

One last activity has to occur: you and the task Force need to celebrate the completion of the plan. Everyone who has participated over the last sixteen weeks has probably done so in addition to their regular duties. Discuss with the management champion what would be an appropriate gesture of appreciation.

At a minimum, you, as the Task Force leader, should send a personalized note to each member thanking them for their participation and making note of any special contribution they made. If you can, prepare an appropriately worded certificate for each Task Force member. If your budget allows, hold a group luncheon or reception, with the management champion expressing appreciation for the team's efforts and highlighting how the company will benefit from their contributions.

In Summary

The activities described in this Chapter give you a broad roadmap for how to develop a Sustainability Plan. The Plan amounts to a cooperative effort among all of the functional areas of the organization. By developing the plan as a grass-roots effort, you will have produced realistic and implementable ideas. Also, by involving all functional areas of the organization, you are likely to gain buy-in from each of them as the ideas evolve from being part of a plan to actually being implemented.

You, as the facilities manager, will most likely be implementing the majority of the approved projects. Be sure to track the results of your efforts so that you will have a compelling story to tell when it is time to update the plan for the following year. The case studies provided in many of the following chapters demonstrate clearly the opportunities you have for making a real impact on the Triple Bottom Line.

Whew! That was quite an introduction! Now you know what a Triple Bottom Line is, why it is important, and what kind of effort it takes to begin transforming your organization. You also have what is likely the most comprehensive action plan you have ever seen to help you get going. But this is just the first step of the eleven we've compiled here. Next, we move onto looking at your overall real estate portfolio to see what you can do with the "Big Picture."

We are starting out at the fifty-thousand-foot level; but don't fear, we will be down in the weeds soon enough—so please be patient; the journey has just begun!

[1]Green Business Practices for Dummies, by Lisa Swallow, Wiley Publishing 2009, p.11

[2]What Color is Your Parachute? (25th Anniversary Edition) by Richard Nelson Boles. Ten Speed Press, 1995, p. 205

ABOUT THE AUTHOR

Edie Fee, MCR
Partner, iNPOINT Advisors

Edie Fee is a recognized industry leader in corporate real estate who integrates 20+ years experience in corporate real estate, organizational development and information technology in both consulting and operating roles. Edie served as the Vice President of Corporate Real Estate for Avco Financial Services until 1996. In this role, Edie was responsible for a global portfolio of over 1500 properties consisting of retail, office, corporate headquarters and a data center. She was responsible for the real estate operations (site selection, lease negotiation, tenant improvements) as well as all facility management and property management for the sites. Edie also was responsible for disaster recovery planning. This strategic role gave Edie the opportunity to incorporate real estate planning into the overall corporate strategic planning.

Following this assignment, Edie moved into consulting for major corporate clients. In this role she managed a corporate initiative to develop a new master plan for a 1Msf facility in order to increase density by 25%. This was also a sustainability initiative in that the interior walls were all movable/reusable walls. She also led an initiative to implement a CMMS system into a major governmental agency. The key to this effort was the effective use of change management strategies to get the acceptance by the users of the system. Edie has subsequently led numerous corporate real estate initiatives incorporating strong elements of change management, sustainability and corporate branding to insure success of the projects.

Edie has made a commitment to serve her community throughout her work life. She has served in leadership roles in numerous community organizations such as the Red Cross and the American Diabetes Association. She served as chair of the board for Mission Hospital Regional Medical Center and Leadership Tomorrow. Edie Currently serves on the board of Camino Health Center and Habitat for Humanity of Orange County. Edie's most recent community interest area is social entrepreneurship. She is currently leading initiatives in two non-profits, one of which will be an innovative sustainable energy product. Edie is also serving as the CEO of a new lifestyle web site, www.FeelBetterNetwork.com.

Edie received the certification of Master of Corporate Real Estate, MCR, from CoreNet and has maintained active status since 1994. She was also named one of the top women of the year by the OC Metro magazine, one of the 10 top women in Facilities Management in California by Facilities Magazine and is featured in the book, What it Takes.

Edie is a partner with iNPOINT Advisors and can be reached at efee@inpointadvisors.com

2 Chapter Two
Real Estate Strategies to Save Money Now (and Later)

Now we are going to talk about strategy. This is the 50,000-foot view of what to do with your portfolio. As we said right at the beginning in Chapter One (and you'll hear it again in the last chapter), your actions to save money today must be linked to an overall, high-level plan, or you're just moving chairs around on the Titanic. And you won't stay in the Boardroom long if you can't quickly link what you propose to a comprehensive real estate strategy. Chapter Two amounts to your quick education on that topic.

Janice Cimbalo (who really, really knows this stuff) brings you a practical guide on how to think about your corporate real estate strategy and offer some "Get it done now" ideas.

Janice Cimbalo, Esq., MCR
Senior Vice President, Jones Lang LaSalle

The Idea in Brief

"It was the best of times. It was the worst of times."[1] These words, written in 1859 by Charles Dickens in the opening line of A Tale of Two Cities, speak directly to the state of the current economy as this publication goes to press in Summer 2009. While the depressed state of the economy is apparent in nearly all sectors, this is also a time of unparalleled opportunity to save money on real estate expenses, the second-largest expense item on most companies' balance sheets behind payroll (Note: in certain highly technologically-based companies/ industries, it may rank third).

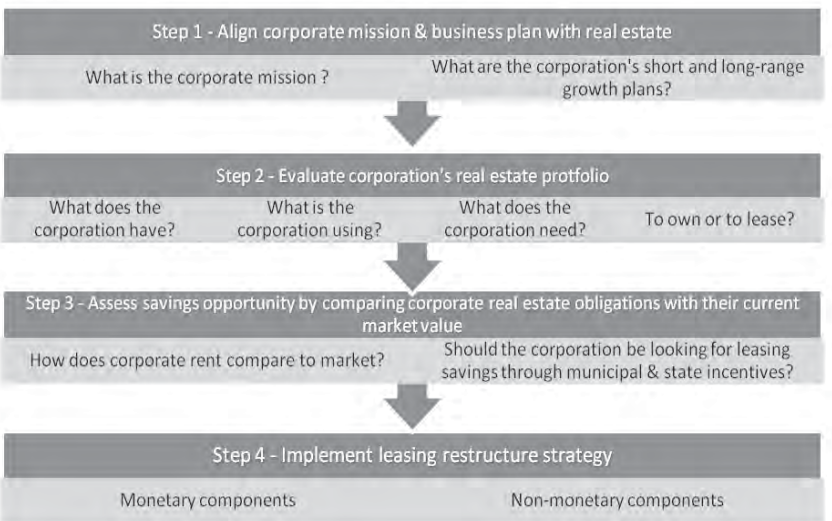
Why does the current economy present a special opportunity? Since 2008, both the S&P 500 and the Dow REIT Index (a marker of publicly traded commercial real estate companies) have both seen sharp declines. As a result, commercial real estate, especially office leasing, has experienced significantly growing vacancies in nearly every market throughout the United States. Due to this economic uncertainty, the resulting increase in supply coupled with the decrease in demand presents an opportunity to review and restructure the elements within a corporate real portfolio at considerable savings.[2]

This chapter will set forth a proactive planning and implementation process that can result in significantly reduced bottom-line costs coupled with increased flexibility in lease terms, all available to a tenant during any kind of economic cycle, whether good or bad. What makes the strategies within this process so important in today's "down" economy is that what is a "good idea" in a good economy often rises to the level of "necessary for survival" in the world in which we now find ourselves.

The process outlined here is comprised of four steps:

1. Determining how the corporation's mission and business plan should align with and drive real estate decisions;
2. Evaluating the company's real estate portfolio in terms of what the corporation has, what it is using and what it truly needs;
3. Assessing the market opportunity by comparing corporate real estate costs to current market value; and
4. Leveraging the market by implementing a leasing restructure strategy utilizing both monetary and non-monetary components.

Figure One: The Real Estate Cost Savings Process



The Idea at Work

The current economy presents an incredible opportunity for the facility manager/real estate director[3] to step in and assist company executives by providing information and implementing strategies that will create bottom-line corporate savings. Facility managers are increasingly tasked with the responsibility of managing real estate as part of their duties. This is an occasion to create or enhance a position within the organization of the facility/real estate director as an irreplaceable asset to the corporate entity. The key is developing a relationship with executive management in which the director is the person who links the "on the ground" real estate with corporate goals.

Fortunately, the real estate professional and the company do not have to face this task alone. Professional advisors, including but not limited to architects, broker/advisors and operating expense auditors, can assist in various stages of this process at little or no cost to the company (many expenses are generally assumed by the landlord within the framework of the eventual transaction, or are based on a contingency fee). Specific examples of these relationships are outlined in this Chapter.

Step One: Evaluate Real Estate in Terms of Corporate Business Strategy

"Strategy without tactics is the slowest route to victory. Tactics without strategy is the noise before defeat." [4]

Aligning business strategy with corporate real estate is an often-articulated desire of "enlightened" real estate professionals, but what does it really mean? Simply put, it means translating the company's mission and vision into the actual use of real estate to maximize the implementation of that mission/vision into the employees' day to day work environment.

Alignment of the corporate mission and projected business plan with the company's real estate will answer tactical questions that will facilitate the implementation of each company's specific goals. The specific steps necessary to this part of the overall process will vary among companies depending on the ongoing relationship and communication pathways existing between executive management and the real estate/facilities professional. In some organizations, the "C Suite" (i.e. the "CEO," "CFO," "COO," etc.) and the real estate/facilities departments are actively engaged and working together to communicate the vital information that one group has and the other needs. For example, executive management has access to the balance sheet information detailing the annual real estate expense, but typically relies on the real estate department to provide individual location costs, employee counts, and annual maintenance expenses. In this case, the real estate/facilities professional may easily be able to discuss current, short-term, and long-term projections with management and to provide recommendations that will adjust the real estate expenses accordingly.

If you do not have regular and ongoing input into the executives in the "C Suite", the following questions may be even more instructive as a way to approach executive management with suggestions about assessment and cost-cutting within the real estate portfolio. The fact that the real estate department has superior access to what actually occurs within the corporate facilities at the employee level, coupled with your knowledge of specific current tools and trends for evaluating the associated costs, can elevate you as the bearer of this information in the eyes of management—especially in an economy such as the one in which we currently find ourselves.

Two questions must be answered to determine how the corporate business mission and strategy should be aligned with the real estate:

- **Question One:** What is the corporate mission, as reflected in its culture and values?
- **Question Two:** What are the company's projected short- and long-term growth plans?

The answers to these questions determine the framework within which the appropriate action can be taken, whether that includes renegotiation, disposition, or acquisition of real estate assets.

Question One: What is the corporate mission, as reflected in its culture and values?

Depending on the specific company, the answer to this question may be easy to ascertain by referring to oft-cited and often-practiced company principles, or extremely difficult when you discover that there doesn't seem to be a standard company mission or plan anywhere in existence. Although many companies do not formally assess their culture, you as a real estate professional are uniquely qualified to assist in evaluating the reality of how the company functions. In general, no one in the organization has more of an "on the ground" feel for business units and how they actually operate than the person or department handling the day-to-day facilities necessities for the employees.

Mission and culture are complementary principles. A corporate mission statement "articulates the company's purpose both for those in the organization and for the public."[5] It answers the basic question "Why do we exist?"[6] Mission statements "broadly describe an organization's present capabilities, customer focus, activities and business makeup."[7] While mission statements are the corporate-generated descriptions of the corporate purpose, the corporate culture is "actually the container for the vision, mission and values."[8] According to Debra Thorsen, "[t]he corporate culture…determines a company's dress code, work environment, work hours, rules for getting ahead and getting promoted, how the business world is viewed, what is valued, who is valued, and much more."[9]

Assessments of your company mission, culture, and values will create answers to tactical questions such as the following:

- What kind of environment are we looking to create? Does a more casual or more formal atmosphere better suit the corporate mission?
- What kind of building should we be in? Does it matter if we are in a downtown high rise vs. a suburban low-rise structure?
- How do we want our workspace to be laid out? Do we want individuals and/or departments in offices and/or separated by department or is our culture stressing collaboration?

Question Two: What are the company's projected short and long-term growth plans?

Corporate projections relative to both short- and long-term planning will vary greatly from one organization to another. As a result of the current economy, many corporations are reluctant to plan very far into the future and/or place a strong value on longer term projections. Again, this is an opportunity for the savvy real estate/facility professional to supplement executive management's strategic projections with the knowledge of what's happening "in the trenches."

Determining these projections has both a company-specific and an industry/economy-specific component. Evaluation of the projections may also vary between public and private corporations based on the importance of the respective drivers (for example, executives in a public corporation conduct business with the knowledge that they must provide quarterly financial reports to shareholders). Company-specific plans generally include factors such as the company's financial position and its plans to grow or shrink specific product lines. Industry and economy-specific considerations include how the company's industry is doing as a whole within the economy and its own sector, and whether or not new technologies are likely to increase or decrease the demand for additional employees and/or new facilities to house the technologies deemed necessary to continue operations.

Of course, corporations whose projections produce a reasonably stable short-term and long-term plan can also benefit from this evaluation; however their real estate considerations may focus on different items than would a company that is anticipating major growth or a significant reduction in size. For example, a lack of fluctuation in size may generate a reduced need for flexibility as a critical leasing term, or it might justify taking advantage of the current real estate market to purchase a building as a long-term investment.

Assessments of the corporation's short- and long-range growth projections will help create answers to tactical questions such as the following:

- How long a lease term should we commit to? Should we take advantage of the current tenant-friendly real estate market and secure a long-term facility or do we need to keep our term shorter until we have more information?
- How much flexibility do we need to build into our plans? Should we seek a termination clause for all or part of our premises in our lease? Do we need to determine that we have Rights of First Offer on adjacent space if we need to expand?
- How much flexibility do we need in the workplace itself? Are we likely to be moving and/or reconfiguring departments? How important is standardization of office and workstation dimensions throughout the organization to ease potential movement?

Many companies have found that an interesting and positive side-effect of conducting a corporate mission/real estate alignment is the clarification of accountability for the various components of the process. When the real estate/facility department gathers information that may or may not have been readily available within the organization in the past, it becomes apparent who has the necessary data to complete the various stages of the analysis. The knowledge of these pockets of data and, in the best case, executive management's use of the information, can provide the impetus necessary to allow the company's internal real estate process to be exposed and improved to increase corporate efficiency. This determination feeds into the next process step.

Step Two: Evaluate the Corporate Real Estate: What Do We Have, What are We Using, What Do We Need?

Once the corporate mission and culture are aligned with real estate to provide basic guidelines for what would be an "ideal" environment for the ongoing business enterprise, it becomes essential to identify and quantify the company's current real estate holdings. This part of the process allows an evaluation of the efficiency of the company's real estate portfolio and how (or whether) that real estate meets the corporate goals and objectives.

Three questions must be answered to complete this step:

- **Question One:** What is contained within the corporate real estate portfolio (i.e. what do we have)?
- **Question Two:** Which portions of the corporate portfolio are being utilized and which are not (i.e. what are we using?)
- **Question Three:** What real estate does the company need to best meet its business objectives (i.e. what do we need)?

The answer to each of these questions as well as the considerations related to leasing vs. owning your facilities will provide you with the framework necessary to continue this process by valuing the current corporate real estate holdings and then implementing specific cost-saving strategies.

Question One: What is contained within the corporate real estate portfolio?

This question essentially asks, "What do we have?" It is the single most instructive step in the analysis process. It seems so elementary that you may wonder why it is a separate process step, especially one of importance. If the fiscal events of the last few years that have propelled us into current market conditions have taught us anything, it is that corporations do not necessarily have in place sound, workable practices to evaluate their business holdings. During one recent conversation, the former real estate manager of a major bank described how his company was unaware that it was paying monthly rent on several leases that had already expired. When he brought this fact to the company's attention, he was told to continue making the payments on the expired leases! [10]

Companies vary widely in the depth of analysis they conduct on their real estate portfolio. While some have had an organized system for years, others will be starting from scratch. Regardless of your starting point, an understanding of exactly what is contained within the corporate real estate portfolio is essential for maximizing

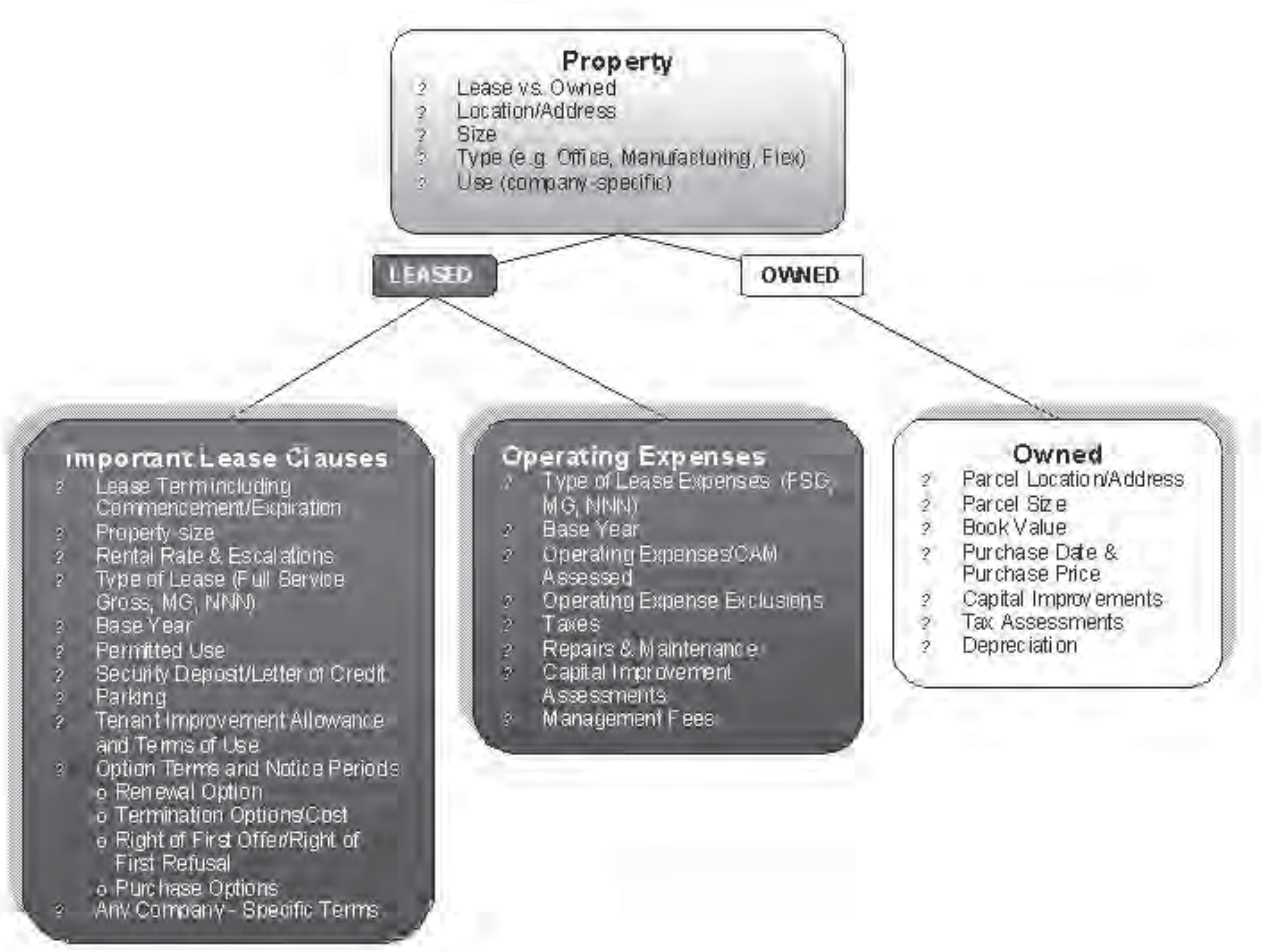
overall savings. The old management adage "You can't manage what you don't measure" is perfectly applicable to the components of a corporate real estate portfolio.

There are several levels of detail that this analysis can take; the time and resources available to the real estate/facility manager will determine what the best course of action is to acquire the necessary data. At the most detailed level, all corporate leases and amendments are abstracted to determine the specific lease or ownership obligations at each location.

This analysis can be done internally, or with the help of advisors who handle lease administration/ abstraction. Some advisory firms have developed customizable lease administration software to accompany this process and create the ability to handle portfolio data on an ongoing basis. Many corporations elect to have their real estate department conduct at least the preliminary analysis of the portfolio. Figure Two (below) demonstrates a detailed but non-exhaustive list of lease and ownership elements to assist in this determination.

This process of identifying real estate locations and obligations is also the first step in standardizing key elements of real estate across the portfolio; for example, office dimensions, number of square feet per employee/ function, and standardization of the work environment and workstations. We will address this topic in more detail within Question 2 below.

Figure Two – Elements for Assessing a Corporate Real Estate Portfolio



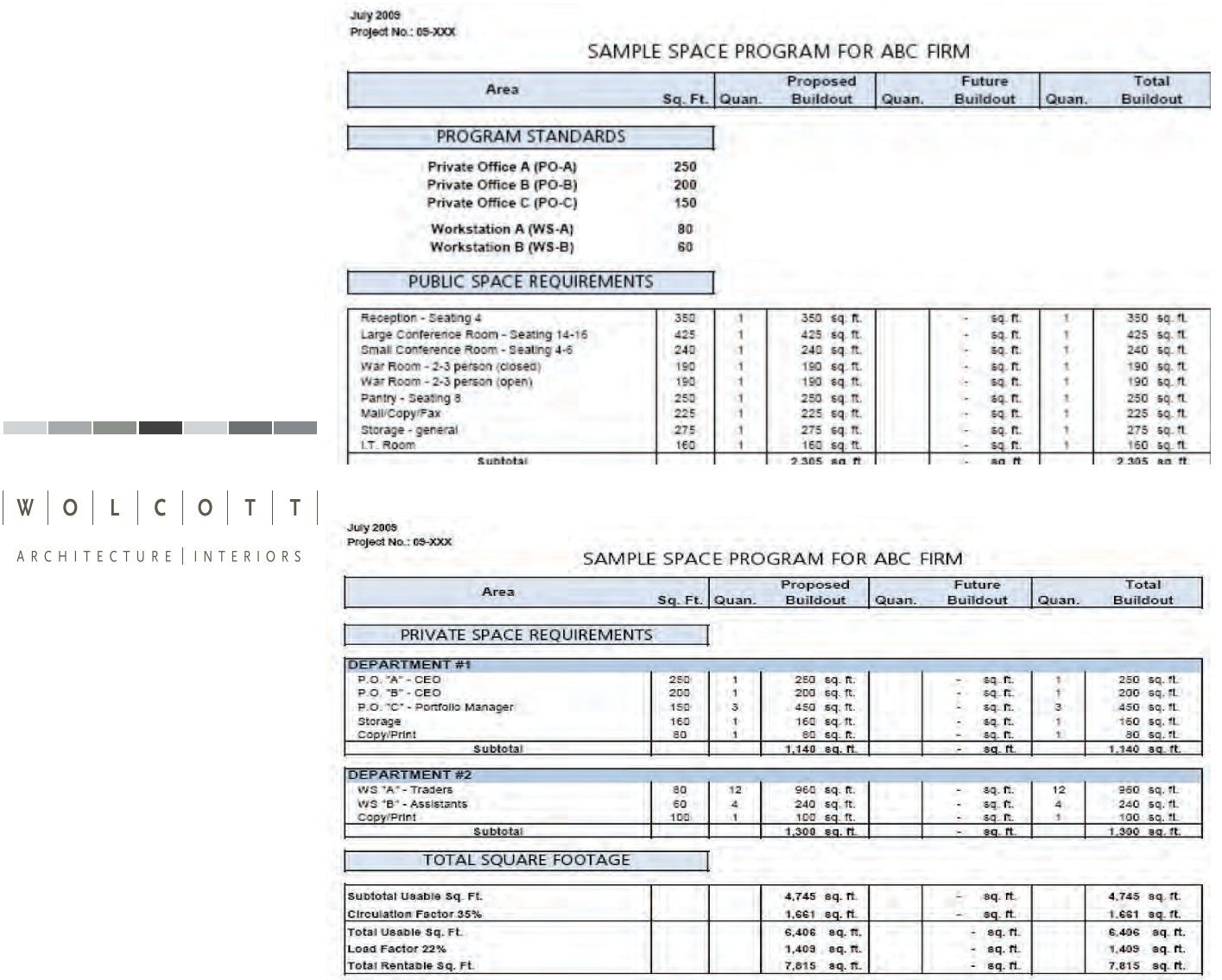
Question Two: Which portions of the corporate portfolio are being utilized and which are not?

According to The Costar Group, there is currently almost 8.3 billion square feet of Class A, B and C office space in the United States marketplace.[11] A recent space utilization study by CoreNet Global surveyed 100 companies and found that at any one time during the work day, on average, 55% of space was not being utilized.[12] Those two data points suggest that there is currently as much as 4.6 billion+ square feet of unutilized/underutilized commercial space in the United States, providing a very important example of the opportunity the facilities management profession has to save significant real estate costs, from the macro right down to an individual company level.

As mentioned above, this portion of the evaluation process provides an excellent opportunity to develop not only benchmarking standards for departmental uses throughout the portfolio but also an internal check-and-balance system for ensuring that your company's real estate requirements match corporate objectives. Like the portfolio analysis itself, this analysis can be accomplished using just the resources of the company's real estate department, or the corporate effort can be supplemented by outside professionals.

Many corporations choose to enlist the assistance of an architect, who can evaluate the portfolio along a number of critical dimensions. Two specific measurement tools are worth mentioning. First is a space program, which has been defined as "a process for fulfilling the dreams, hopes, wishes and desires of the building's . . . inhabitants." [13] Space programming is a useful tool for benchmarking a company's efficiency in using space and how closely that space use is following established corporate guidelines.

In practical terms, a space program sets out an orderly delineation of each department's designated size and therefore generates a total size range for the particular location. The data is collected by interviewing members of the work groups as well as relevant managers to determine the optimal sizes and locations of each affected department. Space programming is often done to determine the ideal size for a particular location prior to a relocation; however, the use of programming at existing locations can assist in this determination in order to adjust the size of that location and create office standards across the portfolio. A sample program is described in Figure Three.



July 2009
Project No.: 09-XXX

SAMPLE SPACE PROGRAM FOR ABC FIRM

Area	Sq. Ft.	Quan.	Proposed Buildout	Quan.	Future Buildout	Quan.	Total Buildout
PROGRAM STANDARDS							
Private Office A (PO-A)	250						
Private Office B (PO-B)	200						
Private Office C (PO-C)	150						
Workstation A (WS-A)	80						
Workstation B (WS-B)	60						
PUBLIC SPACE REQUIREMENTS							
Reception - Seating 4	350	1	350 sq. ft.		- sq. ft.	1	350 sq. ft.
Large Conference Room - Seating 14-16	425	1	425 sq. ft.		- sq. ft.	1	425 sq. ft.
Small Conference Room - Seating 4-6	240	1	240 sq. ft.		- sq. ft.	1	240 sq. ft.
War Room - 2-3 person (closed)	190	1	190 sq. ft.		- sq. ft.	1	190 sq. ft.
War Room - 2-3 person (open)	190	1	190 sq. ft.		- sq. ft.	1	190 sq. ft.
Pantry - Seating 8	250	1	250 sq. ft.		- sq. ft.	1	250 sq. ft.
Mail/Copy/Fax	225	1	225 sq. ft.		- sq. ft.	1	225 sq. ft.
Storage - general	275	1	275 sq. ft.		- sq. ft.	1	275 sq. ft.
I.T. Room	160	1	160 sq. ft.		- sq. ft.	1	160 sq. ft.
Subtotal			2,305 sq. ft.		- sq. ft.		2,305 sq. ft.

W O L C O T T
ARCHITECTURE | INTERIORS

July 2009
Project No.: 09-XXX

SAMPLE SPACE PROGRAM FOR ABC FIRM

Area	Sq. Ft.	Quan.	Proposed Buildout	Quan.	Future Buildout	Quan.	Total Buildout
PRIVATE SPACE REQUIREMENTS							
DEPARTMENT #1							
P.O. "A" - CEO	250	1	250 sq. ft.		- sq. ft.	1	250 sq. ft.
P.O. "B" - CEO	200	1	200 sq. ft.		- sq. ft.	1	200 sq. ft.
P.O. "C" - Portfolio Manager	150	3	450 sq. ft.		- sq. ft.	3	450 sq. ft.
Storage	160	1	160 sq. ft.		- sq. ft.	1	160 sq. ft.
Copy/Print	80	1	80 sq. ft.		- sq. ft.	1	80 sq. ft.
Subtotal			1,140 sq. ft.		- sq. ft.		1,140 sq. ft.
DEPARTMENT #2							
WS "A" - Traders	80	12	960 sq. ft.		- sq. ft.	12	960 sq. ft.
WS "B" - Assistants	60	4	240 sq. ft.		- sq. ft.	4	240 sq. ft.
Copy/Print	100	1	100 sq. ft.		- sq. ft.	1	100 sq. ft.
Subtotal			1,300 sq. ft.		- sq. ft.		1,300 sq. ft.
TOTAL SQUARE FOOTAGE							
Subtotal Usable Sq. Ft.			4,745 sq. ft.		- sq. ft.		4,745 sq. ft.
Circulation Factor 35%			1,661 sq. ft.		- sq. ft.		1,661 sq. ft.
Total Usable Sq. Ft.			6,406 sq. ft.		- sq. ft.		6,406 sq. ft.
Load Factor 22%			1,409 sq. ft.		- sq. ft.		1,409 sq. ft.
Total Rentable Sq. Ft.			7,815 sq. ft.		- sq. ft.		7,815 sq. ft.

Figure Three: Sample Program for a Financial Firm[14]

Although not as commonly considered as a space program per se, a valuable second tool is often called a "Day in the Life" ("DIL") study. It consists of an evaluation of all of the corporate departments during various times of the work day to determine the space they are actually using. A DIL study is a time-intensive yet important activity for determining current and potential future reconfigurations of space. While space programming demonstrates the corporate idea of how space should be used, the DIL process demonstrates the reality of how the space is actually used. Defining these two numbers is often referred to as the identification of "phantom space."

Question Three: What real estate does the company need to best meet its business objectives?

This question basically asks, "What do we need?" After looking more closely at the portfolio via lease abstracts and how it is actually being used via programming, a corporation can then begin to determine what it needs to function optimally, thus meeting the company's mission and business projections. Adjusting your portfolio may entail closing facilities, "rightsizing" individual facilities, changing the types of facilities in the portfolio, or changing the space configuration within existing facilities. With the outline of the entire portfolio now available, the macro-level determination of the locations of the facilities that are optimal and those that are not will now be much clearer.

This new-found clarity can be coupled with demographic and real estate market data to assist in corporate decision-making for the short and long-term, often resulting in very significant savings.

Part of answering Question 3 about corporate facility needs is evaluating whether leased or owned facilities better serve the corporate objectives. A detailed analysis is beyond the scope of this chapter, however there are several items that a company should consider when deciding whether to lease when they have previously owned or vice versa. Some basic considerations include but are not limited to the following:

Reasons to lease:

- Leased facilities provide more flexibility than owned facilities (i.e. a company can contract or expand more readily);
- the current lending market has not freed up enough capital to make new ownership feasible for many companies;
- owning and operating a building is not most companies' core business, so keeping capital free may be a more prudent course;
- the current lease market is extremely tenant-friendly and many concessions are available—It's a great time to be a tenant;
- many corporate building owners are selling their buildings and leasing them back (i.e. a "sale-leaseback") to increase working capital; and
- some companies may choose to lease rather than own for accounting reasons (this is a question for real estate/facilities directors to address with the "C Suite").

Reasons to own:

- real estate purchase prices are lower than they have been in several years (this situation, coupled with recent high default rates, may make a wide selection of reasonably-priced real estate available);
- a company that expects to be stable for the long term may be able to take advantage of the investment value of a consistent asset;
- companies that have specialized real estate requirements requiring heavy tenant improvement investments may benefit from ownership; and
- corporate branding opportunities exist in owned property that often exceeds those of leased facilities.

Step Three: Compare Your Corporate Real Estate Portfolio Costs with their Current Market Value

Now that the real estate mission/values have been aligned with the corporate mission and goals, and the real estate portfolio usage and corporate requirements have been identified, you can identify the value of the corporate portfolio by comparing it to the market. This comparison may also assist in the determination of which locations should be closed, expanded, and/or renewed—especially if the evaluations of the real estate portfolio to this point have not answered all of your executive's questions about this issue. *For example*, if a corporation is deciding between closing a facility in Denver or Dallas, the knowledge of where its real estate obligations lie relative to prices in each of those markets should assist in that decision.

As stated earlier, we are currently experiencing a very tenant-friendly market, and landlords are offering concessions that are unprecedented over the past several years. The last major real estate downturn took place after the "dot-com bust" of 2001, when the collapse of the previous tech boom created a market characterized by increasing vacancies, lowered prices, and increased landlord concessions. Starting in the mid-2000's and ending in early 2008, the more recent increase in real estate prices, based on an explosion of purchase activity, a landlord-friendly market. As a result, many tenants currently in the midst of a lease negotiated during that time are now paying substantially more than current market rates.

An example of this rapid and inflating pricing was seen recently in West Los Angeles, where the so-called "New York Effect" was pronounced. During the 2006-07 time frame, New York venture capital firms began purchasing West Los Angeles commercial high-rise properties. Within six months, the rental rates had nearly doubled from previous levels. These venture capital firms, which virtually controlled the submarket, unilaterally decided that if real

estate was worth "x" in New York, it should be worth "x" in Los Angeles. Unfortunately, any tenant signing a lease during that period is now responsible for the terms in a significantly over-market lease.

As discussed earlier in this chapter, rent savings are not the only component that is important to the corporation and to the facility/real estate professional. Depending on what the corporate "hot buttons" are, monetary issues such as operating expenses and/or non-monetary issues such as flexibility could make a lease re-negotiation worthwhile. More details about these individual lease elements and re-negotiation issues will be discussed in Step 4, below.

A final issue related to value concerns monetary savings outside of a specific lease; it ties in to external incentives frequently offered by states and municipalities. While a detailed discussion of this issue is outside the scope of this chapter, it is important to note that many cities and states are interested in having certain kinds of jobs and industries enter their region, and they will often offer powerful incentives for particular companies to relocate, offering tax credits, job training cash rebates, and/or other incentives. Organizations that are reviewing their entire portfolio and looking ahead should consider working with a real estate professional specializing in incentive negotiations to explore whether these kinds of public incentive opportunities might provide additional cost savings.

Step Four: Implement Lease Restructure Strategies via both Monetary and Non-Monetary Components

Now that the real estate requirements are aligned with corporate goals, the real estate department is aware of what the portfolio contains, and the corporation's location needs are qualified and compared to current market value, it is time to implement your strategy through cost-saving lease re-negotiations. In this section, our focus is on maximizing savings with respect to lease obligations rather than owned properties.

All companies can benefit with these tools, whether they are "healthy" or "distressed." For a "distressed" company fighting for survival, these recommendations are especially vital for improving the bottom line on the second-largest corporate balance sheet item after payroll and could quite literally inject new viability into the corporation.

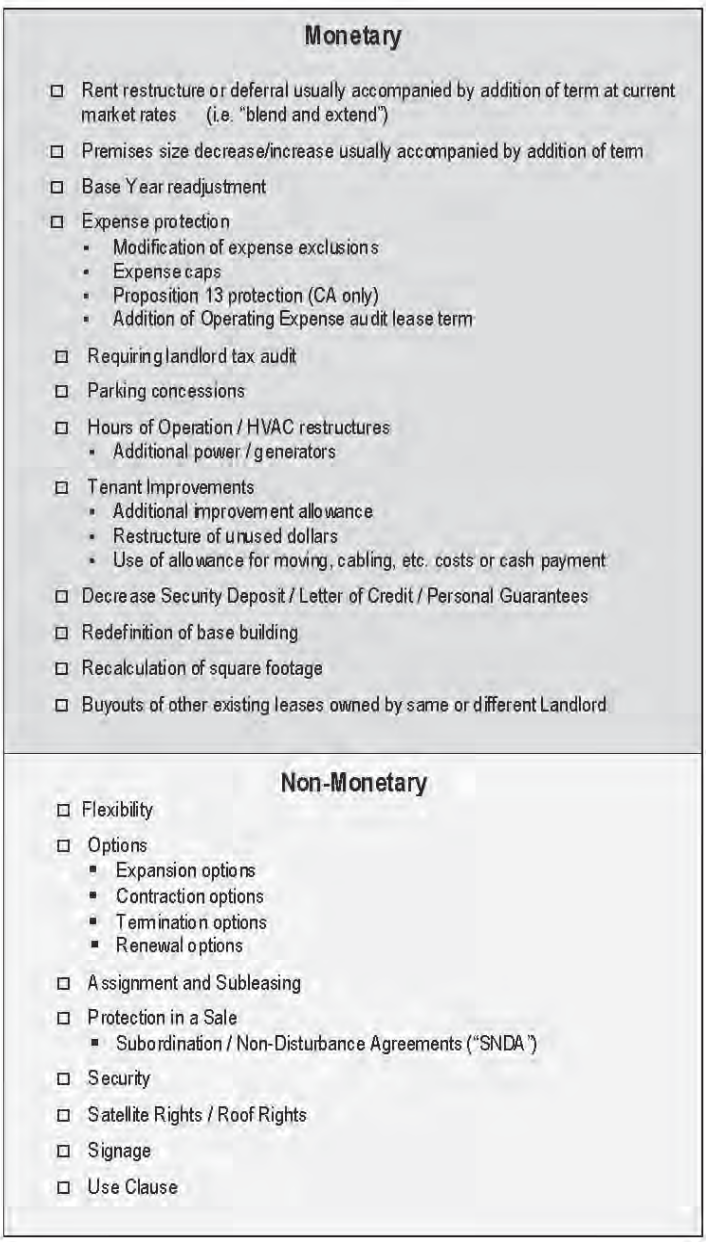
Although these tactics may be used in any market to a tenant's advantage, the current tenant-friendly market environment is especially conducive to maximizing these savings. Tenants can consider implementing these recommendations any time during their lease; however, tenants in the last two to three years of a lease will be able to take heightened advantage of the current "soft" market. Figure Four demonstrates some of the current market drivers from both a Landlord and Tenant perspective.

Figure Four: Landlord and Tenant Market Drivers

Tenant	Landlord
• Greater risk (real or implied) has led to shorter term transactions • Tenants want to take advantage of lower market rates for leases negotiated during market peaks • May need monetary lease concessions to continue profitably operating business • May need to re-size lease obligation to continue profitably operating business • Leaning more heavily on renewal/refurbishing vs. relocation	• Landlords need to maintain good terms with mortgage lenders and value/need longest lease terms possible • Landlords want to keep certain pro forma lease rates intact, especially if they bought during market peak • Landlord needs reliable rental stream to stay current with lenders • Doesn't want to give any one tenant too many concessions ("slippery slope" argument) • Can reasonably assume most tenants favor renewal to relocation in current market

Regardless of the market or the economy, there is a constant list of lease elements that could be considered for renegotiation. How these elements are renegotiated (i.e. the story that is told) will depend on the particular local economy and the tenant's financial and market strength; however, the list set forth in Figure Five and the accompanying explanations can be used in a wide variety of situations.

Figure Five – Checklist of Potential Lease Restructure Issues



Note that, depending on their specific circumstances, not all tenants will want or need to renegotiate each of these points. The list of issues is divided into "monetary" and "non-monetary," although even the non-monetary issues may result in monetary savings in some way, since they generally lead to savings that improve corporate efficiency. For example, a very flexible sublease clause allows a tenant ease in subleasing and thus allows the tenant to exit an unnecessary location swiftly, thus reducing or eliminating a lease obligation.

Monetary Drivers

1. Rent Restructure/Deferral

In terms of each individual leased location, your lease renegotiation can be contemplated as an early renewal negotiation, often called a "blend and extend." This gives the Tenant whose current lease terms are above market the opportunity to decrease its rental rate, with a typical tradeoff of adding term to the end of the lease at those favorable market rates. Variations of this basic model include but are not limited to the following:

- Terminating a portion of the existing space and adding term;
- Expansion of the current space with or without additional term;
- Termination of another lease obligation with the same ownership with additional term;
- Termination of another lease obligation with different ownership with additional term;
- Deferral of some or all of the current rent, with additional term or increased rent added later in the Term

Please note that many owners, especially those that recently paid top dollar for their properties, may be reticent to deeply discount the "face rate,", or actual lease rental rate. What they often do instead is provide items such as free rent, cash payments, etc. to lower the effective rate during the lease. This allows them to renegotiate a lease without having to advertise a lower rate, thus decreasing the building's value in the eyes of their mortgage lender.

2. Evaluate Corporate Operating Expenses

Depending on the kind of building and ownership, tenants can enter into one of three main kinds of leasing structures: Full Service Gross ("FSG"), Modified Gross ("MG") or Triple Net ("NNN"). In an FSG lease, which is typically found in Class A and many Class B buildings, the tenant must pay its proportionate share of operating expenses and taxes relative to the size of the building over a Base Year (please see the Glossary for definitions of MG and NNN leases). For example, if a tenant has 2009 Base Year expenses of $8.00/sf and the next year's expenses are $9.00/sf, the Tenant must pay the $1.00/sf difference in the second year. Each year after the Base Year the Tenant must add that year's incremental increase to its rental payments.

Base Year Readjustments can be achieved in this market and can save significant dollars on FSG leases. As described above, a Base Year is used to determine when the calculation of incremental expenses begins in a lease. This is especially important to revise when the lease was executed several years ago, as the Tenant is paying incremental gains for all years after the Base Year. When the Base Year is reset, there are no pass-through expenses (i.e. the Tenant pays rent only) for the new Base Year and then the expenses above that begin to be charged based upon the difference from a higher starting point. On a large lease that was executed several years ago, this can equate to substantial savings.

FSG leases typically include a list of Operating Expense Exclusions, which are specifically defined expenses that the landlord may not include in the operating expenses that are passed on to the tenant. It is in the tenant's best interest to have as many of these well-defined exclusions as possible, and they are one of the items that can be open to re-negotiation. The more specific and the greater the number of exclusions found in the lease, the less the corporate operating expenses will be. During tenant-friendly markets, it is also much easier to re-negotiate to include Expense Caps, which are limits on the amount that certain expenses can rise annually.

A related lease clause is an Audit Clause, a provision that allows tenant a period of time to audit these Operating Expense pass-throughs to determine if the landlord has incorrectly charged or failed to exclude the proper items. If the tenant has the ability to audit these expenses, it can engage the services of a CPA or a lease audit firm to perform the evaluation. Many of these audit firms operate on a contingency basis; that is, their fee is a percentage of the savings they identify. Please note that many leases have restrictions limiting the kinds of firms that can perform these audits, especially those firms that operate on a contingency basis.

Finally, note that for tenants with locations in California, a state constitutional amendment called Proposition 13 provides that the tax basis for a building is based upon the year it was purchased and can only increase significantly upon a sale. A lease clause provided for Proposition 13 protection allows the tenant to be exempt from paying the property tax increase associated with a sale during the term of its lease as part of its operating expenses.

3. Requiring a Landlord Tax Audit

Requiring a Landlord tax audit is a renegotiation point that is also possible in the current market. Either included or in conjunction with Operating Expenses, tenants pay their proportionate share of building tax expenses as a function of how much space they occupy in the building/project. In the last few years, buildings have been sold at historic high prices, causing a corresponding increase in assessed tax values. In some cases, this has resulted in a significant increase in tax pass-throughs. Many owners are requesting tax reassessments now that property values have dropped. In certain instances where Tenants occupy a significant portion of the building or project, Tenants can make this request to the Landlord and have it reflected in their Lease.

4. Parking Concessions.

Parking concessions are also a negotiable item in the current market. These concessions generally come in some combination of three forms: reduced pricing per space from the current level; some form of fixed-rate or free parking for a period of time or for a defined number

of spaces; and/or the ability to use—but not have to guarantee—a specific parking ratio pursuant to the lease. Other parking issues to note:

- the landlord can usually grant concessions, although they may be limited if the parking garage is operated by an outside vendor;
- make certain that on-site and off-site parking is adequate for current and anticipated future growth;
- ensuring a proper ratio of reserved vs. unreserved spaces; and
- if there is a charge for visitor parking, try to get discounts on validations.

5. HVAC Hours and Rate Modifications.

Modifications of hours of operation and/or reductions in heating, ventilation and air conditioning ("HVAC") charges are another item to consider. In an FSG lease, building hours as set by the landlord generally include HVAC at no additional charge. Most buildings then have an after-hours charge for tenants who request HVAC service after those hours. Ideally, when the lease was originally negotiated, the specific needs of the tenant were considered, and if additional building hours were necessary for the business operation they were included at no extra charge. If that was not the case, or if the company's work hours or requirements have changed, after-hours HVAC at rates of anywhere from $25-$70/unit/hour could be costing your company significant dollars and be an area of large potential savings. It may also make sense to congregate employees with similar schedules and/or tasks in specific work areas to reduce your after-hours HVAC costs.

6. Tenant Improvement Allowances

In the current market with many tenants deciding to remodel instead of relocate, greater and more flexible Tenant Improvement Allowances have returned to the forefront. These allowances often take three forms:

- Additional Tenant Improvement Allowance dollars associated with an expansion and/or renewal;
- Restructure and use of formerly negotiated but unused Tenant Improvement Allowance monies; and/or
- Permissible use of new Tenant Improvement Allowance as outright cash payments, use for moving, relocation, furniture or equipment costs.

7. Security Deposit/Letter of Credit/Personal Guaranty Decrease or Removal.

Landlords usually take some form of security associated with a lease, either in the form of a Security Deposit, Letter of Credit or Personal Guarantee. Tenants renegotiating in the current market are often able to get some or all of this previously-provided security back upon the execution of the new lease.

8. Recalculation of Square Footage.

Tenants always pay rent based upon the building's square footage. Most buildings have a pre-determined square footage and load factor, which may change every few years according to redefinitions of BOMA standards. Significant building or project tenants may be able to renegotiate and/or remeasure their building square footage to change their rental costs as well as their operating expense costs.

Non-Monetary Drivers

The principal non-monetary driver is flexibility; and, while it benefits all tenants, for many it is a critical factor in the ongoing ability to conduct business. Flexibility considerations within a lease fall into two main categories: Options and Assignment; and Subleasing Provisions.

1. Option Terms

There are four main types of options, each creating its own kind of corporate flexibility:

Expansion Option. Guarantees that during a specified time period and with proper notice, Tenant has the right to expand into a defined space. Note: differs from "must takes", which require that the expansion will take place within a defined time period.
Contraction Option. Guarantees that upon proper notice and a specified time period (or periods), a tenant may contract its space to a pre-negotiated size.

Termination Option. Allows the tenant to terminate all or part of a lease obligation (when only a portion of the premises are terminated, it's usually called a Contraction Option). Typically there is a Termination Fee, which may include but is not limited to: a penalty (flat fee or a certain number of months of rent) and unamortized costs at a pre-determined interest rate.
Renewal Option. Subject to proper notice, this option allows the tenant to "tie up" the premises for the renewal period. The renewal rate can be for a fixed, negotiated price or for some percentage of fair market value.

2. Assignment and Subleasing Terms

A sublease is a lease executed by the original tenant (now the Sublandlord) and the new tenant (now the Subtenant) for all or portion of the premises and all or a portion of the lease term. An assignment occurs when the new tenant takes all of the Premises for the entire lease term and the assignee (the new tenant) is directly responsible to the original landlord.

Two important considerations should be noted when renegotiating this clause:

Percentage of profits. Try to keep the highest percentage of profits possible. Define exclusions to definition of "profit" as broadly as possible (e.g., exclude attorney's fees, brokerage commissions, advertising, and downtime necessary to sublease the space);
Exclusions. Exclude reorganizations or sales to related companies from the definition of the sublease or assignment (therefore no notice or process is required to the landlord).

3. Protection in a Building Sale.

With the high volume of building sales that have taken place during many tenants' current lease terms, the importance of Subordination/Non-Disturbance Agreements ("SNDA") cannot be understated. A subordination is an agreement whereby the tenant agrees to adhere to the terms of its lease with a new property owner (i.e., the lease terms are subordinate to the interest in the property). A Non-Disturbance Agreement provides that the new owner has to honor the terms of the tenant's Lease. It is standard practice for a lease to contain subordination language that requires the tenant to comply. The tenant must actively negotiate Non-Disturbance language so that any new landlord is bound to the terms of the lease and the tenant cannot be summarily ejected or the lease terms altered.

4. Building Security.

This component includes any additional security or security expenses as set forth in the operating expenses section of the lease. Since the events of 9/11, this component has become a major expense item and therefore should be delineated separately in the lease, especially with regard to exactly what services the landlord will be providing and the hours during which these services are offered.

5. Satellite Rights/Roof Rights.

Many companies require the use of rooftop satellite dishes or other machinery in order to conduct their business. Landlords may charge a separate fee for these rights; these fees are best negotiated during the initial lease discussions or re-negotiation rather than inquired about separately at a later time.

6. Signage.

Depending on the building and the market, signage can be a huge money-making opportunity for the landlord and a valuable concession that can be negotiated into the lease. Again, the appropriate time for discussion is during the initial lease, or later re-negotiation, discussions.

7. Use Clause.

Every lease has a use clause that determines how the premises can be utilized. If a tenant has an unusual or difficult use, this should be a potential renegotiation point.

References

[1] Charles Dickens, *A Tale of Two Cities*, 1859.

[2] This chapter will focus primarily on leasing strategies. However, the suggestions considered here are valuable to corporations who own their facilities as well.

[3] The terms "facilities manager," "real estate director," "real estate professional," and so on are used interchangeably here, as those titles and duties vary among different organizations.

[4] Sun Tzu, *The Art of War*, 6th Century B.C.

[5] Ward, Susan, *Mission Statement*, About.com, http://sbinfocanada.about.com/od/businessplanning/g/missionstatemen.htm

[6] Ward, Susan, Ibid.

[7] David, Fred. Glossary, Strategic Management: Concepts and Cases, 2009, Prentice Hall, Publisher.

[8] Thorsen, Debra, *"Definition of Corporate Culture"*, eZine, http://ezinearticles.com/?Definition-of-Corporate-Culture&id=99997

[9] Thorsen, Ibid.

[10] We can only speculate what was behind that directive; to our knowledge the real estate manager was not told why he should continue with the lease payments.

[11] CoStar Group, "The CoStar Office Report Mid Year 2009 – National Office Market", 2009.

[12] CoreNet Global, as quoted by Laurence Barklay in Planon's *"Financial Guide: How to Save Money and Create Value in a Tough Economy"*, p. 3.

[13] Duerk, Donna P., Architectural Programming: Information Management for Design, Wiley, 1993.

[14] Contributed by Amanda Kaleps, Principal, Wolcott Architecture/Interiors, Culver City, CA

Conclusion

In sum, there is a great deal of money that corporations can access by knowing their business objectives and their real estate requirements, and then using the results of that information aggressively to renegotiate their existing leases. The suggestions discussed here will provide value to any tenant in any market, with the current market providing additional incentives to act sooner rather than later.

The evaluation of corporate real estate holdings is a fluid rather than a static process that will continue to evolve as the company's needs change. However, identifying current needs will create a major opportunity to access monetary savings today, and will allow you as a real estate/facility director to make a positive and measured impact within your organization.

Congratulations, you've made it through another chapter. You have a new vocabulary and a strategic view of facilities management. This view may be new for you, but be patient; we'll be getting to more familiar topics shortly, but we truly believe this type of grounding is necessary in today's economy.

Trust us; this stuff works! Now that we know where our buildings are and roughly how we can manage them from an asset-based perspective, let's travel from the home to the office. As you'll see in Chapter Three, that's not as simple as you might think. Moving people from their neighborhoods to their offices, back and forth, back and forth, has a significant social and environmental impact that is often overlooked but can be overcome. Read on.

ABOUT THE AUTHOR

Janice L. Cimbalo, Esq., MCR
Senior Vice President, Jones Lang LaSalle

Ms. Cimbalo is currently a Senior Vice President at Jones Lang LaSalle in Los Angeles, California. In her 11 years of experience as an exclusive Tenant advisor, she has also worked with both Cushman & Wakefield and Studley to consistently provide strategy and tactical implementation while acting as an advocate for her clients.

Prior to her tenure in real estate, she was a litigation attorney for 7 years. Her legal experience assists in her negotiation of complex real estate transactions, including incentive negotiations for her clients throughout the United States and internationally. She alse provides clients with cutting-edge strategic solutions, such as her continuing work with SCAN Health Plan to evaluate and implement cost-saving stratagies in the development of SCAN's "Office of the Future."

Ms. Cimbalo was awarded Dallas Business Journal's "Best Headquarters or Corporate Campus Move" for her work with 21st Century Insurance Group.

Ms. Cimbalo is the President of the Board of Directors for the Corporate Real Estate Council of the International Facility Management Association (IFMA) and is actively involved in CoreNet Global, through which she received her Masters of Corporate Real Estate. She is the Program Director for the Organization of Women Executives and is a founding member of Executive Real Estate Women. She received a Bachelor of Arts degree in Psychology and Economics and a Bachelor of Science degree in Biological Sciences from the University of California at Irvine. She acquired her law degree from Pepperdine University and is a member of the State Bars of California and Tennessee.

Ms. Cimbalo can be contacted at: janice.cimbalo@am.jll.com or jcimbalo@verizon.net.

3 Chapter Three
Telework: The New Work (R)evolution

Getting from where we live to where we "work" is often a neglected part of the total employment experience. But all that traveling around has very significant impacts on our community and our environment. The phenomenon of "telework" has been around for decades—but is getting some new interest as we become more sensitive to the "triple bottom line".

Glenn Dirks and his partners at Teletrips offer some intriguing insights into an old idea. Telecommuting is a work option that can show immediate results (just cut out driving to work everyday and watch your gasoline consumption and carbon output shrink) and build more capacity for the long run.

Glenn Dirks
Teletrips, Inc.

The Idea in Brief

"Work is something we do, not a place where we go"

Where do you work? That used to be a simple question to answer, but not anymore. Truth is, the nature of work has changed. Historically work was defined by traveling to one location to work a standard "9-5" job. However, rapid advancements in information, telecommunications technologies and global competition have fueled a fundamental shift in how, when, and where knowledge work is conducted.

Today, knowledge workers have the ability to connect with the people, information, and tools that they need from anywhere and at anytime no longer requiring the traditional "office" as a place to work. We are entering an era of "Work Anywhere" and the "anywhere office"—but it isn't a transition that comes easily or naturally.

Statistics show us that:

- The average knowledge worker is away from their desk 60% of the time
- Yet less than 4% of the knowledge workforce is fully enabled to work in a mobile / work anywhere / distributed fashion

The concept of teleworking, or telecommuting as it is often called, has been around for many years. So why aren't telework programs more prevalent in government and corporations that employ large numbers of knowledge workers? In short, although many organizations want to support the concept of teleworking or working anywhere in its broadest definition, few know how to implement such practices. There are also significant barriers that must be addressed, including:

- Resistance to change;
- Suitability of an employee's work requirements, personal work practices, equipment or work environment;
- Security concerns; and
- Funding, especially of technology infrastructure

.

This chapter is about effectively designing, implementing, and managing a work-anywhere program and measuring the financial, environmental and social benefits that accrue to employees, the corporation, and the society at large. Several case studies are included to illustrate how the work-anywhere culture was implemented; we describe the program processes that were used and report the overall impacts.

Extensive workplace research confirms that a significant number of knowledge workers are already working in a mobile fashion, meaning they do not routinely go to the location where they have an assigned workspace. This current work pattern has resulted in a 30%-40% under-utilization of corporate infrastructure, and it highlights an immediate opportunity to transform informal, ad-hoc behavior into a formalized workplace program that could significantly change the planning and management of corporate real estate. Employees who routinely work three or more days away from their assigned workspace are blocking off space that could be used by others during

their absences. This shift in seating allocation will drive higher headcount-to-seat ratios, provide the opportunity for additional portfolio consolidation, and result in associated cost savings. Additional benefits include:

- Using remote and distributed workers as the foundation for business continuity plans;
- Positively impacting employee morale, work efficiencies and the ability to attract and retain key talent; and
- Altering commute patterns, thus reducing traffic congestion and greenhouse gas emissions.

The degree to which a company can successfully leverage the opportunity to transform the real estate portfolio is dependent on how well its management understands all aspects of its workforce, their work patterns and preferences, and the infrastructure needed to support a mobile work strategy. But data alone is not enough. It is critical to have business processes that can transform the new work realities into new work environments in a cost-effective manner, monitor and measure the impact of these new business strategies, and report the results effectively.

Teleworking Comes of Age - Some companies dictate it, some countries legislate for it, but every company must have a plan that allows a significant part of its workforce to work from home. Whether implemented as part of a swine flu pandemic plan, avoiding disruption from industrial action, or to provide a flexible working environment for employees, teleworking is an essential element of modern business practice.[1]

The Idea at Work

Making the necessary changes to address new work realities sounds like a daunting challenge. Undoubtedly, how the workplace is viewed and the workforce is supported in the future will certainly be different, but you don't have to deploy "Work Anywhere" programs in a single, complex, comprehensive initiative. However simple and straight-forward the approach, a new workplace program must be based on data and deployed in a disciplined and managed way, including monitoring and reporting program results.

Here are some key activities to consider before getting started:

- Fact Finding. Your employees are not the first ones to experience these new work realities. Do some research, check with professional organizations such as IFMA or more specifically-focused groups with telework-related web sites, or do a web search on terms like "telework," "telecommuting," or "flexible work" to discover what is already known about mobile work. Many regional planning organizations, state governments, and the U.S. federal government support telework programs and have information to assist you; policy guides, training materials, and in some cases preassembled telework kits. Architectural firms and organizational management consultants are also a good source of information. (See the Resources section at the end of this chapter for specific links and other resources)
- Plan Initial Approach. Based on the survey of your workforce, determine the scope of your telework initiative and how many employees you want to involve in your initial deployment. Leverage lessons learned from other initiatives recently launched within your organization—for example, IT deployments or HR programs. Keep it simple, maximize early success, report your achievements to management, then expand your program.

[1]Roger Hockaday, director of marketing at Aruba Networks EMEA.

- Business Case. Using your early research, make some simple calculations of your estimated return on investment (ROI) in developing your business case. A telework program formally enabling employees to work from home one or more days per week may not provide any immediate real estate savings, but will certainly support your company's business continuity plan (e.g., for responding to pandemics or natural disasters), increase employee satisfaction (improving employee attraction and retention), and contribute to your sustainability efforts in reducing traffic congestion and greenhouse gas emissions. All of these factors can be defined in terms of their financial value to your company.
- Internal Stakeholders. Work-Anywhere programs involve physical workspaces, the necessary enabling technologies, and work practices. They also require support not only from Real Estate and Facilities, but IT and Human Resources functions as well. Make sure to discuss your Work-Anywhere initiative ideas with these and other stakeholders and proactively solicit their assistance. Encourage them to contact their professional peers to learn what they are doing in other organizations.
- Endorsement and Approval. Like any other change initiative, a new mobile work plan will need management approval. Because it is a relatively new idea, prepare management for these discussions by sending them information, articles, success stories, case studies, and data that supports the benefits of implementing a Work-Anywhere program. Start small, set objectives that are specific and focused, and expand your program by leveraging your successes.

Executive Summary

The nature of work has changed. New advances in enterprise and personal technologies, coupled with contemporary corporate business priorities, have generated a new set of work realities. Employee work patterns and their use of corporate infrastructure have also changed dramatically in recent years, often resulting in under-utilization of existing space and a work environment that no longer fully matches the needs of an increasingly mobile workforce. Although apparently complex to resolve, simply adjusting the workplace infrastructure to accommodate today's flexible work practices can result in dramatic, positive financial, environmental, and social benefits.

Work today is clearly more decentralized, collaborative, and interactive. New mobility tools have broken the tether that has required knowledge workers to work at traditional, assigned workspaces; they now have the ability to work almost anywhere, with anyone, at any time. Environmentally responsible business practices have increased the focus on the real estate portfolio and building management. Even business continuity planning has broadened its scope to include pandemics and acts of terrorism, not only natural disasters. These factors are all evidence of why we need to change how we think of and enable work.

Corporate resource organizations have been addressing many of these issues in terms of more efficient building maintenance, energy management, and eco-responsible construction and renovation. However, are those efforts enough? To make a truly significant impact, we must "think outside the box" and embrace the notion that the most efficient and environmentally responsible buildings may actually be the ones that are no longer in your portfolio (or do not have to be built in the future).

Enabling and encouraging workplace mobility by deploying a Work-Anywhere Program can have direct impacts on real estate and facilities budgets, employee satisfaction, recruitment and retention, and productivity. They can also have immediate positive environmental impacts. Implementation has become easier with the introduction of new web-based software tools to enable and support these new workplace initiatives in a cost-effective way.

Strategic Program Design

You need to follow a very systematic approach when developing a Work-Anywhere program. It is critical that you start by gathering some data about your workforce, no matter how limited. Using that data, develop your program design and deployment strategy. Not all programs have to start from "scratch." In situations where time and budget is limited and management is looking for a very quick return on investment, you might consider a Rapid Prototype approach. Using this option, Work-Anywhere program strategies are typically more limited in scope, relying on a program template or strategy similar to those deployed successfully in other organizations.

Program deployment should be managed using a standardized process to assure consistency across work groups. The overall success of your program should be assessed using a variety of metrics that enable you to track program deployment, employee performance, and environmental impacts. Each of these program elements is outlined below:

- Assess and Design. Successful Work-Anywhere programs begin with a clear understanding of the workforce and your current infrastructure. You can develop that understanding by surveying employees, categorizing them into unique work types or profiles based on their reported abilities and work-styles as well as their support requirements and preferences regarding working in a mobile/distributed fashion. It is also important to understand the gaps that exist between the current corporate infrastructure and the infrastructure that will be needed to support a mobile workforce.

  With data specific to your company, you can define a practical Work-Anywhere strategy or program that balances flexibility with management controls specific to your corporate needs. Data collection and analysis is often done manually with surveys, individual interviews, and focus groups. However, web-based software tools are now available to accelerate data collection and facilitate assessments much more cost-effectively (see the Resources Section at the end of this chapter for some examples of those tools).

- Manage. Employees suited for mobile work should be enrolled in your Work-Anywhere Program using a simple, consistent process. This process must include an employee suitability/eligibility assessment, managerial decision and approval workflows, policy awareness assurance, training, and the development of employee-specific Work-Anywhere program agreements. Tracking employees' progress through each step of the enrollment process can be done using simple spreadsheets, especially for small groups. However, as the size of the groups increase or you scale across your company, it is much more accurate and efficient to use automated web based tools that monitor program enrollments and highlight bottlenecks that must be addressed in the short term.
- Monitor and Report. It is widely recognized that you cannot manage what you do not monitor. That is certainly the case with Work-Anywhere programs, even if they are deployed using automated software tools. Measuring program impact provides the critical data necessary to validate return-on-investment estimates made in the business case and to provide management with the feedback they need to provide continued program endorsement and resource support. Monitoring and measuring program performance can be done either manually or with the assistance of web-based tools.

The Program Details

The following case studies are examples of successful Work-Anywhere program deployments. The approach each company took varied depending on its specific business drivers and objectives, corporate culture, and extent of executive support. The common key to their success, however, was that each followed a disciplined, consistent development and deployment process that included the three phases of Assess and Design, Manage, and Monitor and Report.

The first example describes a relatively conservative approach that dedicated a significant amount of resources in the initial phases of the project to research and program design. The design was then tested before any attempt was made to expand enrollment company-wide. The

greater up-front investment and slow, cautious deployment meant a longer time before the expected ROI was achieved, but it also increased the probability of success. The second case study was a rapid prototype approach in which management wanted faster deployment with a quicker payback. This example is best described as an iterative deployment within limited, preselected groups. This case study also identifies the benefits of using automated, web-based deployment tools.

Case Example One:

Global Technology Company Headquartered in the Silicon Valley, California with approximately 8,000 employees

Business Rational. One of the key incentives for this particular initiative was to minimize under-utilized space and provide work environments that more effectively enabled employee mobility. Management also believed that these new work environments would increase their access to global talent and that improved employee work/life balance would enhance the company's ability to attract and retain key talent. Supporting flexibility in the work force also met their business continuity planning objectives and the need for a distributed work force able to respond to regional crises. The new work initiative also supported a growing corporate sensitivity to environmental issues and workplace sustainability.

Approach. Executive sponsorship for the work initiative originated within corporate resources; it was led by the Vice President of Real Estate. Management chose to take a data-driven approach, use that data to develop a program specification highlighting key work environment enablers for real estate, IT and Human Resources, and then test that new program specification in pilot implementations in the United States and Asia.

Data was collected from the employee, organizational, and infrastructure perspectives. A company-wide employee work pattern assessment survey was administered to determine individual employee suitability for mobile work. Key executives were asked to validate corporate business objectives and supporting key organizational behaviors they believed to be critical in achieving those objectives. The core team conducted workshops with Real Estate, IT, and Human Resources staff to document current infrastructure capabilities and issues.

These assessment efforts provided a baseline that was used to develop functional specifications for Real Estate, IT, and HR. These functional specifications became the foundation of the work initiative strategy, giving clear direction to what had to be changed in physical design, technology, and work practices as well as providing an overall sense of organizational readiness for the new work environments.

Once the work initiative strategy was reviewed and approved, two pilots were planned to test the new work environment. The pilots involved work groups of approximately 85 to 150 employees in each location, included a new flexible workspace design, mobile technology to support a majority of unassigned employees, and formal training for all managers and employees involved in the projects.

One pilot was based in a corporate campus setting and the other pilot involved a field sales office in Asia. Pre- and post-pilot surveys were used to identify employee satisfaction with the new work environments and the programs they were now using. The results of the surveys were used in developing subsequent action plans.

Assessment Results. The employee assessments demonstrated that employees were already more mobile than management realized. On average, employees spent less than half their time working at their assigned desk. Even more enlightening, half of the respondents preferred an unassigned, more flexible work arrangement than they currently had. Based on suitability determinations from the survey, equal percentages of the workforce were recommended for traditional, assigned work arrangements, flexible workspaces within immediate work group areas, and mobile arrangements outside the corporate facilities or at home. From an infrastructure perspective, almost two-thirds of the individual workspaces were unoccupied or temporarily unoccupied on an average day. Conference rooms had similar under-utilization rates.

Pilot Results

Overall, the majority of U.S.-based post-change respondents reported favorable responses to the key work effectiveness criteria, with technology and the capability for distance collaboration rating the highest. Ratings typically were at the low- to high-80% favorable levels. The Asian field sales office had similar favorable levels, with more notable increases in satisfaction with HR practices and management support.

After one year in operation, the headcount-to-seat ratios for the corporate, campus setting were approximately 1.4:1. The company also achieved a real estate footprint reduction of approximately 30%.

Given the nature of field sales, the offices were planned for an even higher density. As you would expect, the headcount-to-seat ratio in the field sales pilot was greater at 3:1. However, the space still had an average utilization rate of only 60%. The flexible workspace plan proved to be overly conservative; in hindsight management believed they could have achieved an even greater headcount to seat ratio, possibly as high as 5:1. Even at the 3:1 level, the company achieved an average real estate reduction of 32%.

Case Study Two:

U.S. Financial Products and Services Company Headquartered in New York with approximately 10,000 employees

Business Rational – The Alternative Work Strategy (AWS) team at this financial services firm was chartered to develop a new work environment that would reduce cost while improving work effectiveness and employee satisfaction. Management recognized that employees did not always need to be at their usual workplace in order to get their work done, and that the company needed to provide the infrastructure and managerial support that would enable employees to work in alternative locations, provided of course that their roles and work styles were suited to do so.

Approach. The firm's management opted to take an iterative approach in exploring the benefits of a potential new work environment. In the summer of 2008, a telecommuting pilot was deployed to enable150 employees to test the telework program assumptions, to collect early feedback, and to make adjustments before expanding the program to other groups.

Administration of the first pilot was managed entirely by hand using email and simple spreadsheets. The levels of employee and manager participation over the first five months of the pilot were reasonably satisfactory, but the process of manual administration proved to be arduous and time-consuming. In February 2009 a new web-based tool was deployed to accelerate the enrollment process.

In both the manual and automated phases, data collection was done with a short survey to determine employee's suitability to work from home. The survey results pointed each employee towards one of three work-from-home arrangements: occasional, part-time, or full-time work from home. In the automated phase the software tool managed all of the enrollment activities including training, telework agreements, and provisioning the resources needed to enable employees who were approved to telecommute. Pre- and post- work effectiveness surveys and a quarterly manager survey were included in the process to monitor and report program performance.

With the early success of the first telecommuting pilot, the AWS team accelerated its deployment and launched the second step in the new work environment process by looking at opportunities throughout the company to expand the program beyond "simple" telecommuting. An asset management workgroup was selected to participate in a detailed work pattern assessment survey. Results of that survey are currently being used to understand the potential for broader program development and deployment.

Pilot Results.

During the initial deployment of the telecommuting pilot (the manual phase) approximately 225 employees and managers were enrolled over a five-month period. With automation, the enrollment rate doubled, adding an additional 500 participants over the next five months. The automation simplified and accelerated the enrollment process as well as providing the consistency and efficiency

that will be needed when the program is eventually scaled across the entire enterprise.

Two surveys were conducted to measure the results of the pilot. The first was a manager survey that was administered before the pilot was launched in order to assess manager attitudes towards telecommuting and their overall readiness to manage a more mobile workforce.

In general, managers had a positive view of telecommuting and the company's efforts to establish a formal program. The most frequently requested information centered around telecommuting policies and procedures. Managers also expressed a need for additional remote management skills. When they were asked about management challenges, their greatest concern was about the possibility of telecommuters becoming disconnected from the organization, which managers described as "out-of-sight, out-of-mind". They also wanted to be certain that telecommuters would have effective remote-access tools and support.

Managing employee career development and monitoring employee productivity were also identified as concerns. In general, managers believed the telecommute program would have a positive impact on employees and the company through improved work/life balance, higher workforce satisfaction, meaningful cost savings, increased retention, and more efficient recruiting of new employees. The primary area of negative impact identified was with communication within the distributed workgroups.

Five months after the pilot was launched a second survey was administered to both managers and employees participating in the pilot. The vast majority of managers responded positively when asked about their employees' accessibility and how effectively they communicated while working remotely. The managers also responded favorably concerning individual employee performance and group performance.

"Access to the employee was never an issue and the ability to manage multiple deliverables was not impeded at all". - Manager

Managers also indicated their satisfaction with the value added by the program.

"I think the telecommuting program is a great benefit to provide to our staff. I have seen this be a big help in managing a work / life balance" - Manager

From the employee perspective, most were satisfied with the technology and furniture setup in their home offices. They also reported that their homework environment was effective in supporting their productivity. Nearly all the employees said their manager was supportive of their telecommuting.

"Telecommuting is a nice benefit and in most instances it has resulted in greater productivity." – Employee

"I have not seen any decline in productivity. With so many people we work with outside the company, or in other offices, speaking on the phone or online is now the norm, even while in the office at times." - Manager

Assessment Results. One of the primary objectives of the work pattern assessment survey was to understand how various work environment solutions could best support current workforce requirements. Respondents to the survey were spread across several uniquely-defined work profiles based on their reported support requirements, abilities, work-style, and work arrangement preferences.

Each work profile includes specific work environment enablers that are needed to support work effectiveness. The distribution of the workforce across these work profiles also informs the AWS Team about potential program deployment modifications, work arrangement changes, and the overall opportunity and value of the new work environment to the company.

For the study group, analysis of the data suggested an opportunity to make significant changes to the current work environment that will provide better support to employees in the future. When asked about their current work arrangement preference, only 40% of the respondents said they would choose to keep their "assigned" workspace,

with 34% preferring a "flexible" arrangement and 15% choosing to be "home-based" (11% were unsure about which work arrangement they would prefer).
The analysis also suggests a gap between the current work infrastructure (resources provided now to employees in the workplace to enable them to get their work done) and the infrastructure needed to support the ways employees are already working. Only 36% of the survey population was optimally supported by the current work environment, leaving 64% of the population with an opportunity for significant improvement. Aligning the workplace infrastructure with workforce requirements has had a very beneficial impact on the company, its managers, and all its employees.

The Impact

Earlier we mentioned the importance of measuring the impact of your programs. The financial impact is typically measured from a cost accounting perspective using a Return On Investment (ROI) calculation. However, measuring the impact of new work environment initiatives should not be limited to monetary criteria. Since new work environments encompass workplace, technology, and organizational practices, it is appropriate to expand the measurement methodology to include a complete Triple Bottom Line assessment (TBL)[2]. A Triple Bottom Line (TBL) model extends financial accounting concepts to measure not only economic, but also environmental and societal/ well-being performance.

By including economic, societal, and environmental factors organizations can then understand and respond to the implications, constraints, opportunities, and tradeoffs relevant to their line of business. TBL gives organizations a full multiple-account analysis of costs and savings for their program, as well as the benefits to their employees, stockholders, communities, regions, and beyond. An expertly designed and fully-implemented Work-Anywhere program can have far-reaching impacts for employers, employees, and communities. Following are some examples of measurement criteria from each of these perspectives:

Employees

♦ fuel savings	♦ motivation
♦ job satisfaction	♦ team relationships
♦ work-life balance	♦ information access
♦ better tools	♦ personal expenses
♦ carbon emissions	♦ absenteeism
♦ health and well-being,	♦ manager relations
♦ team collaboration	♦ affinity
♦ efficiency	♦ commute time
♦ flexibility	♦ continuity
♦ overall quality of life	♦ workspace
♦ stress	♦ fitness
♦ employment contract flexibility	♦ choice
♦ personal productivity	

Companies

♦ information security	♦ employee retention
♦ business continuity	♦ public relations
♦ corporate social responsibility	♦ recruiting potential
♦ real estate cost	♦ commercial energy use
♦ employee commitment to excellence	♦ training
♦ loyalty	♦ employee engagement
♦ culture	♦ organization effectiveness
♦ travel	♦ investments
♦ knowledge sharing	♦ customer service
♦ absenteeism	♦ office space
♦ work location	♦ company image
♦ employee attraction	♦ environmental regulations
♦ labor turnover	♦ recruiting pools
♦ work time	♦ relations with trade unions
♦ workforce planning	♦ power consumption

Communities

♦ vehicle miles traveled,	♦ neighborhood crime
♦ road congestion	♦ operational continuity
♦ road safety	♦ noise pollution
♦ energy conservation	♦ landfill waste
♦ road maintenance	♦ residential relocations
♦ construction	♦ car ownership
♦ mass transit usage	♦ automobile accidents
♦ greenhouse gas emissions	♦ parking
♦ economic development	♦ traffic management services
♦ job opportunities	♦ water pollution,
♦ community development	♦ air quality
♦ quality of life	♦ non-commute business travel
♦ residential energy use	♦ community safety
♦ paper consumption	♦ community development
♦ trip reduction	

[2]See also the discussion of the Triple Bottom Line in Chapter One.

Key Lessons Learned from the Workplace

What have we learned while developing and deploying new work environments over the past several years? Here are some ideas to share with management as you begin discussions about changes that you may want to make to your company's real estate portfolio, technology infrastructure, and work practices:

- The workforce is already far more mobile than most of us realize, resulting in significant under-utilization of corporate resources and less-than-optimal support of the workforce we are chartered to enable;
- Not only is half the workforce well-suited to work in a more mobile fashion, but a majority of them today would prefer to work more flexibly;
- Technology advances and new business practices have significantly changed the way work gets done. However, the typical work environment has remained the same for decades; yesterday's work environment is still trying to support today's work requirements;
- Human Resources is a new and critical member of the cross-functional team that develops and deploys new work environments;
- The changing nature of work requires employees to do things differently, and a well-designed change management strategy must be in place to help employees through the transition;
- Communications is critical; your communications about the transition and the new ways of working must be comprehensive, consistent, and timely;
- New work environments should be viewed as liberating, not restricting the way employees work;
- Automating business processes and procedures greatly simplifies and accelerates program deployment;
- Management support and public endorsement is critical; reinforce the impact of "walking the talk" every chance you get;
- New work environments generally produce a long-term ROI; returns are incremental; don't expect to see major savings in less than 3-5 years; and
- The number one barrier to resistance will come from middle management.

Playbook to Get You Started

Here is a simple roadmap outlining activities and actions for you to consider as you start to decide what workplace changes to make and how to go about implementing them. Recognize that your timeframe may vary depending on your current business environment and Corporate culture.

Forming the Core Team

- Identify initial project team members (project lead; representatives from real estate and facilities; IT; and human resources)
- Discuss roles and responsibilities
- Identify a senior-level executive sponsor
- Discuss corporate culture and drivers for workplace change

Envisioning Activities

- Create awareness of the changing nature of work—and how it applies in your own organization
- Secure executive direction, staff alignment, and team commitment to developing a new work environment
- Assess the company's readiness for change
- Identify barriers to program implementation
- Secure alignment on company goals, objectives, priorities, and organizational characteristics
- Understand the business drivers for workplace change (cost, worker productivity, business continuity, sustainability, etc.) as they apply to your organization
- Discuss your approach to developing a workplace program (comprehensive vs. an incremental, rapid prototype, and so on)
- Discuss need for outside resources to assist in program design, operation, and measurement
- Develop the business case for the new work environment initiative

Discovery

- Understand your workforce requirements and how employees work today; and be explicit about where they work, what they do in those locations, whom they interact and communicate with, and what work arrangements they prefer
- Understand your current infrastructure capabilities and deficiencies (workspace, technology, work practices)

Design and Deploy the Pilot

- Set pilot scope and define pilot success metrics and objectives
- Identify pilot groups
- Develop a pilot provisioning kit
- Develop marketing/communication and change management strategies for the pilot
- Develop a metrics framework for measuring pilot outcomes
- Launch the pilot
- Measure performance (delivery, program, internal and external financial, and environmental impacts)

Resources

Continuity of Operations Programs (COOP) / Business Continuity Planning Resources

The American Red Cross – www.redcross.org

Center for Disease Control (CDC) – www.cdc.gov

Association of Contingency Planners (ACP) –Dedicated to the evolution of business continuity

Organizations

Telework Exchange - events, resources, tools and information focused on the Federal Government Sector (http://www.teleworkexchange.com)

The Telework Coalition – news, tools, facts and references (http://www.telcoa.org)

The Telework Network – Resources for managers on how to get a program started, checklists, policies & procedures, laws, costs & benefits and case studies. Teleworkers can find out how to set up a safe & healthy home office and how to get connected. Go to: http://www.teleworknetwork.com

Telework Advisory Group for WorldatWork – committed to advancing telework (http://www.workingfromanywhere.org)

Official web site of U.S. Federal Government Telework Program (http://www.telework.gov)

The Canadian Telework Association – great content. Go to: http://www.ivc.ca

Regional Programs

Minnesota Dept of Transportation - called eWorkPlace, (http://http://www.eworkplace-mn.com/

State of Arizona Telecommuting Program –Go to: http://www.teleworkarizona.com/mainfiles/visitor/voverview.htm

Telecommute Connecticut – Go to: http://www.telecommutect.com/homeplate/home.php

Commonwealth of Virginia - Telework!VA – Go to: : http://www.teleworkva.org/contactus.htm

Washington DC's Regional Council of Governments' (WashCOG) Telework for Employers Program – Go to: http://www.mwcog.org/commuter2/employer/employer_telewoking.htm

Washington DC Regional Telework Centers – greatest concentration of network of telework centers nationally. Go to: http://www.wmtc.org

Calgary, Canada Regional Telework Initiative – called WORKshift (http://www.workshiftcalgary.com)

National Commuter Challenge – Canadian event to encourage telecommuting (http://www.commuterchallenge.ca)

Service Providers

Teletrips, Inc. – web-based tools and methodologies for the design, implementation, operation, and evaluation of work-anywhere programs (http://www.teletrips.com)

Gil Gordon Associates – consolidates a wide variety of information from around the world, and from many different perspectives, on the subjects of telecommuting, teleworking, the virtual office, and related topics. Gil Gordon Associates web site: http://www.gilgordon.com/

e-Work –Leading-edge, highly interactive, web-based training. Go to: http://www.e-Work.com

Work Design Collaborative – the Future of Work program. http://www.thefutureofwork.net

References

Real Property Policysite – Newsletter GSA Office of Government-wide Policy, Office of Real Property Management, June 2009. http://www.gsa.gov/Portal/gsa/ep/contentView.do?contentType=GSA_OVERVIEW&contentId=23607

Home Workplace: A Handbook for Employees and Managers by Brendan B. Read (CMP Books, 2004)

Now we've gotten you into the parking lot, though we hope perhaps not as often as you used to get there. But there you are: so where do you go next? Chapter Four takes a closer, and revealing, look at an everyday part of our environment that most of us just don't see at all—the landscaping that surrounds the office building. So what? Well, there's a whole new pile of cash waiting for you to find it out there. Just sit back and read on.

ABOUT THE AUTHOR

Glenn Dirks
Director, Teletrips, Inc.

Glenn has 35 years experience in facilities management, environment, health and safety and human resources in the electronics industry and regulatory agency arena. During this time, he became nationally recognized for implementing innovative, organizational management techniques within his work groups in areas of leveraged outsourcing, change management and implementation of mobile work programs. In his 21 year tenure with Sun Microsystems, Glenn managed Sun's U.S. facilities operations, developed the Corporate Environment, Health & Safety function and then shifted his efforts to human resources where he lead HR organizational work practice efforts in developing and implementing Sun's flexible work environment program. Glenn helped evolve Sun's internal flexible work program to an external consulting practice assisting Fortune 500 companies in telecommunications, energy, defense, technology and finance to develop their own flexible work environments. Glenn joined Teletrips in December 2008 to develop world class SaaS tools designed specifically to enable companies to pilot and scale their flexible work programs. Glenn holds both Bachelors and Masters degrees from the University of Wisconsin.

4 Chapter Four
The Role of Landscaping

This chapter is the first of our real "deep dives." It's relatively tactical yet still follows our theme of what you can do today to cut costs and improve operations while keeping tomorrow in mind.

Now, you're in the parking lot and you're hiking across all that asphalt towards the looming structure in front of you. What do you see? What can you do here, outside the building, to become a corporate hero?

Matson Walter and Kelly Duke have pulled together an impressive set of ideas about the landscaping that surrounds your building. That is what they do for a living, and we're very fortunate they agreed to share their insights with us. We told you this book is a comprehensive look at facilities management. We meant it, and we haven't left any leaf unturned (horrible pun fully intended).

Kelly Duke
Vice President, Pre-Construction Services, ValleyCrest

Matson Walter
Associate, Melendrez

Asset or Burden?

For some facilities landscaping is a valued component of the overall site Gestalt. For others, it is a burden imposed by agency mandates. In either case, landscaping can present a significant challenge to the operational budget, often leading to ad hoc cost-cutting tactics that are ultimately counter-productive.

For facilities still on the drawing board there are a wide array of simple yet effective design strategies that can reduce both installation and long-term maintenance costs. Existing facilities can achieve comparable success in reducing landscaping maintenance costs through selective renovation and retrofitting.

What is good for the environment is also good for the bottom line. Start looking to the natural environment for relief from excessive operating costs.

Improved landscape cost performance need not compromise the importance and benefits of human interaction with nature (from healing gardens to increased productivity).

We need to stop replicating familiar old-world garden designs. We must learn to value and appreciate what the indigenous landscape has to offer. Each local ecosystem is unique.

The Idea at Work

Design should create new, or find within existing, social spaces that allow for a variety of formal and informal interaction.

Assessing existing site assets and constraints is key to creating a sustainable landscape, whether at the design stage or with an existing and established property. A detailed accounting of quantities, sizes, structure, health, appearance, and the environmental burden or benefit of each landscape feature is the first step in this process.

Integrate a social, yet sustainable landscape program against the available site assets and constraints, limiting high maintenance areas to high visibility or multiple activity areas, and designing for reduced maintenance in background, peripheral, and utilitarian areas.

Make your landscaping a cost-effective working component of a broader sustainability effort. Use plantings for storm water management, temperature moderation, soil preservation, and biodiversity. Design or upgrade irrigation systems for improved water efficiency and conservation. Reduce the amount of green waste sent to landfills by using cuttings onsite.

Executive Summary

For an existing property there are essentially two approaches to saving costs in the landscape management arena. First, you can leave the landscaping as it is, but cut back on routine maintenance services. Secondly, you can selectively revise the landscape itself to reduce the elements that drive up landscape maintenance costs.

The first approach will result in some initial savings. It will also be accompanied by a profound reduction in curb appeal and compromised site safety. Ultimately, this approach backfires when it becomes necessary to replace plants, perform restorative or therapeutic pruning, and conduct major offensives against weeds or pests.

The second approach requires some initial analysis to rank the relative functional and aesthetic merit of each area of the site and to weigh the relative value or burden of each tree, shrub, ground cover, or lawn area within the prioritized visual zones. Once this analysis is completed, selective plant material removals or replacements can be determined and implemented. The net result is a landscape that is harmonious with its setting—requiring less water, less mowing, less trimming and pruning, fewer fertilizers and pesticides, and less labor, as well as producing less green waste. Done correctly, the resulting landscape is aesthetically pleasing where needed and functionally efficient where appropriate.

This chapter will focus on the second approach.

Rethinking Landscaping

For landscaping that has yet to be installed maintenance strategies can be developed during the design phase. Designers need to work with the owner to generate a vision that is maintainable in both budget and programmatic expectations. A successful landscape incorporates sustainability measures into a design while creating a sense of place. It's important to understand that a sustainable landscape design with region-appropriate plants does not restrict you to a certain design "style." Regional plantings are just part of the palette that creates meaningful spaces.

Sustainability measures are best incorporated during the development of the project. The most sustainable and cost-effective landscape is the one that has already occurred naturally. Incorporate existing mature trees and naturalized areas into the design. The design for sites that have been cleared of significant vegetation should reintroduce naturalized areas, allocating maintenance efforts to the highly visible and utilized spaces. These utilized spaces should be designed with the flexibility to serve multiple programmatic elements, further reducing the amount of developed space.

When it comes time to plant, both the designer and the owner must fight their desire for immediate gratification. Plants are often planted too close together without considering the eventual size at maturity. It may look great for the ribbon-cutting ceremony, but such a lack of patience and foresight has consequences later when maintenance

crews have to dedicate resources to impose a size and look the plants don't naturally possess. That artificial approach also compromises the health and appearance of the plants.

The Trophy Landscape

For decades, landscape designers, contractors, and property owners have perpetuated a Euro-centric notion of what could be described as the "trophy landscape." By that we mean a landscape designed to reflect a worldly perspective, technical supremacy, and our presumed power over nature. Consider it "Versailles meets Manifest Destiny."

As a result, gardens and landscapes most often reflect what the owners want and not what is necessarily appropriate for the climate, soils, or exposure. At a minimum, we have created unsustainable landscapes. At worst, we have often introduced invasive species that have wreaked havoc on native plants, thereby compromising what had been balanced ecosystems.

Today we are at an economic and environmental crossroads. Smart landscape design decisions made today can have a profound positive impact on both the fiscal bottom line and the resulting environmental footprint. Whether the change is easy or hard will depend on your ability and courage to make the paradigm shift to a more sustainable landscape.

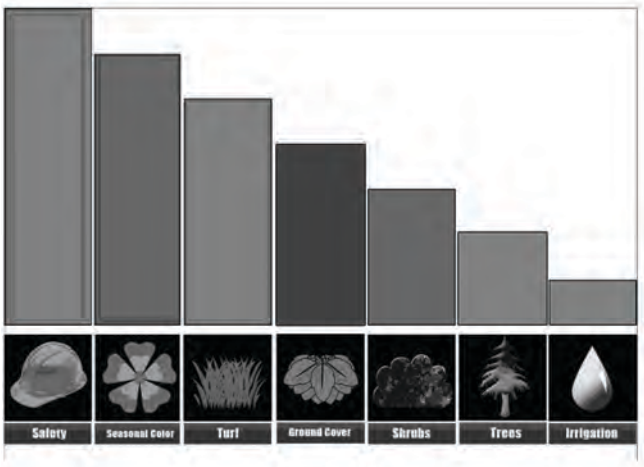
Strategies

Much of what is included in this chapter is aimed at the existing landscape and the needs of the facilities manager confronted by a reduced budget. But the basic concepts can also be incorporated easily into the design program for projects still on the drawing boards. For existing landscapes there will be front-end costs to correct past mistakes or to introduce new systems. For proposed landscapes, enlightened design with a sustainable focus should add little or nothing to the installation price tag while delivering immediate savings over conventional designs that are inappropriate from a horticultural perspective.

Plant Assessment

The traditional view of the landscape tends to prioritize landscape elements along the lines shown in Figure One:

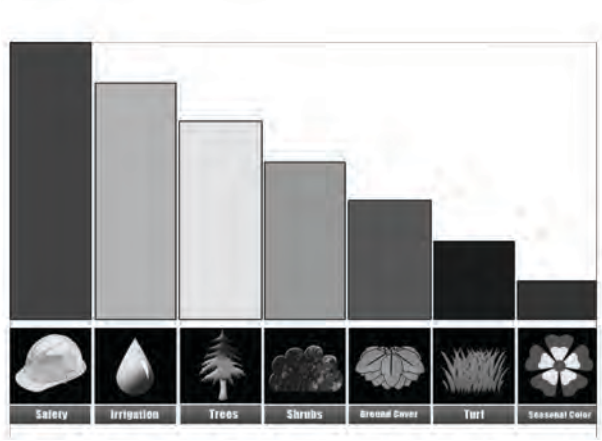
Figure One: Landscaping Design Priorities[1]



Reading from left to right, after safety, this perspective places high importance on seasonal color, turf, and ground cover plants—three areas of high maintenance labor, water demand, and fertilizer requirements. Other elements fill out the graph in roles of lesser importance.

We highlight in this chapter an alternative view of landscape priorities (see Figure Two):

Figure Two: An Alternative Approach to Landscaping Priorities[2]



[1] Image courtesy of ValleyCrest Companies, © copyright 2009

[2] Image courtesy of ValleyCrest Companies, © copyright 2009.

This approach moves things around a bit. In this view, water, trees, and shrubs are prioritized as the key elements of the landscape after safety. The reference to water is in terms of its conservation; its importance should be obvious. The significance of trees and shrubs relates to both the value of their relative mass in the overall design and their various contributions as visual screens, wind breaks, sun shades, and sequestering carbon dioxide.

Making the mental shift to this more environmentally appropriate priority scheme leads to the next step: evaluating your landscaping (whether existing or proposed) with an eye toward de-emphasizing the elements on the right side of the charts. This approach need not eliminate color or turf entirely, but suggests limiting those components to areas where they are most needed or where they serve a specific programmatic purpose.

The following graphic (Figure Three) is a simplified programmatic representation of a typical commercial or industrial property with frontage, entry, and back-of-house areas. Individual properties will vary in layout, the amount of frontage, on-site programmatic demands, challenges imposed by adjacent and abutting properties, and even local agency or association requirements. Nonetheless, it may serve to suggest how one might look at and re-prioritize areas of the site for the next phase of landscape assessment.

This approach suggests prioritizing areas of the site into primary, secondary, or tertiary levels of landscape depending on how and where they interface with employees, tenants, or customers, or by specific program needs.

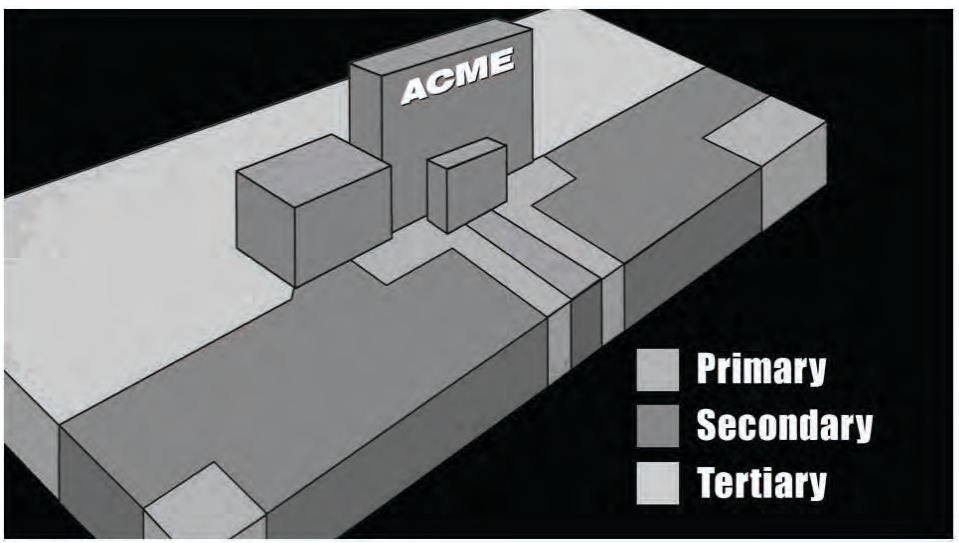
Primary: Plants at the main entry plaza and building front foundation, or near monument signs, might have high impact seasonal color or selective coordinated plantings since these are the heavily-used spaces that create the site identity.

Secondary: The overall public frontage might be needed to serve only as a functional foreground of low groundcovers or lawn alternative, preserving view corridors for the building entry.

Tertiary: The back of the property is often used for parking, and is typically visited only by employees. This is an ideal location to preserve or incorporate naturalized areas into the landscape with a more detailed planting design at the employee entrance.

A review of these components might require over-arching decisions regarding the reduction or elimination of seasonal color bed or turf areas with replacement with lower-maintenance and lower-water-use ground covers or shrubs. More selective and “surgical” changes will be made in the next phase of the assessment process.

Figure Three: A Typical Commercial Property[3]



Phase three of the landscape assessment focuses on individual trees, shrubs, and groundcover plantings. Decisions here are aimed at identifying and reducing or eliminating individual trees or classes of shrubs that impose an undue maintenance burden. They may have been inappropriate to the area from the beginning, and have likely been a challenge to manage or have struggled against pests, climate, soil conditions, or other forces beyond their ability to adapt.

[3] Image courtesy of ValleyCrest Companies, © copyright 2009

For example, trees rank as a high priority in the "enlightened" landscape scheme. However trees that are short-lived, structurally weak, damaged, or prone to disease and insects may be candidates for "early retirement" and replacement with a species that requires less water, produces less leaf litter, requires less pruning, and has fewer pest problems.

Similarly, formal hedges that require incredible amounts of labor to maintain and also produce large amounts of green waste should clearly be re-evaluated. If space needs or program objectives dictate a hedge, it may be possible to consider a different species of shrub that grows more slowly, is finer-textured, or otherwise reduces labor or green waste. It may also be practical to consider the use of chemical Plant Growth Regulators (PGRs) to slow growth as a means of retaining the hedge while reducing trimming labor and green waste production.

Shrubs that impose an excessive labor burden in terms of pruning, spent flower removal (dead-heading), insect or disease control, or water demand should be seriously reviewed against their programmatic value and considered for either reduction or removal from the landscape. Depending on which of the above zones the plants are in, it may be possible to replace the shrub with a more appropriate species or eliminate it all together and replace it with a heavy layer of mulch for dust and erosion control.

Ground cover areas hover in the middle of the enlightened landscape priority scheme in that they are generally lower maintenance and may use less water than turf but can impose their own pressures on the landscape budget. For example, replacing a vine-type ground cover with a spreading hardwood shrub may be an effective way to maintain a verdant ground plane while reducing water use and labor maintenance over time.

Turf areas certainly need not be eliminated in whole. Depending on the species of turf and its location on the site, it may be possible to allow the turf to grow into a meadow feature. Rather than weekly mowing, the area would be mown once or twice a year, with the clippings left in place. A turf-to-meadow conversion can be enhanced through the addition of select native wildflowers or ornamental grasses.

Figure Four: Lawn Area Converted to an Urban Meadow[4]

]

[4]Image courtesy of ValleyCrest Companies, © copyright 2009

This strategy can impart a naturalistic look to the area and help to recapture or increase biodiversity. In addition, breaking up the monoculture of the lawn can serve to reduce susceptibility or spread of common turfgrass diseases.

Note, however, that the longer turf may require changes to the irrigation system to elevate sprays or rotors above the elevated turf height.

Landscape assessment and re-prioritizing of an existing property is a process. It need not be done in one operation. Indeed, for best results, it should be carried out over time, during the most appropriate seasons, and in a manner that leads to minimum disturbance to the overall look or function of the property and the employee routine or customer experience. Additionally, it is one tool of several offered in this chapter. Assessment and reprioritizing of your landscape should be looked at holistically and integrated into an action plan that includes such other elements as irrigation system upgrades or green waste recycling—with the knowledge that at each phase of the plan, the landscaping moves towards a more sustainable site over time.

For facility managers uncertain of where to start, landscape architects and landscape management professionals are available to help them make the right decisions during the assessment process.

Water Conservation

Saving water saves money. According to the U. S. Geological Survey, Irrigation accounts for approximately 34% of the total water consumption in the United States[5]. Additionally, the Environmental Protection Agency suggests that up to 50% of all commercial and residential irrigation water goes to waste.[6]

Most irrigation water waste occurs through excess run-off, over-spray onto walks or walls, leaky systems, misting drift, and by water running out of the lowest heads in a zone when the system is shut off. Immediate reductions in water consumption can be achieved simply by routinely inspecting each system and correcting such common maladies as broken or missing sprinkler heads, or broken or cracked pipes; and by adjusting the arc and spray radius of each sprinkler head as noted below:

Reducing Water Loss: Reduce misting and wind drift with pressure-compensating nozzles or pressure-regulating control valves which modulate line pressure. Install low head anti-drain valves to prevent water loss through lowest heads when the system is turned off.

Uniform Distribution: Uneven distribution of irrigation water across a given sprinkler zone wastes water; if one runs the system long enough to meet the water needs of any areas with poor coverage, one invariably over-waters those areas with adequate coverage. Improved uniformity of irrigation precipitation can be achieved through adding or deleting sprinkler heads and by retrofitting all sprinkler heads with nozzles engineered so that their precipitation rates are matched regardless of radius or pattern arc.

Hydrozones. Additional water savings can be achieved by matching planting and irrigation into “hydrozones” where the water needs of the plants are comparable within each irrigation zone.

[5] Hutson, S. S. et al 2004, Estimated Use of Water in the United States in 2000, U. S. Geological Survey Circular 1268.

[6] Author Unknown, 2008, WaterSense: Outdoor Water Use in the United States, Environmental Protection Agency Document EPA-832-F-06-005

Smart Controllers: Additional water savings can be achieved through the use of what are generally referred to as “smart controllers.” Traditional irrigation controllers are timers that turn valves on or off in a pre-programmed sequence based on estimated water needs. The water needs of plants can vary with changing weather conditions and should be met with changes to the irrigation program. It is not convenient or feasible to manually re-program each irrigation controller with each change in the weather. Thus smart controllers were developed.

Most standard controllers can be made “smarter” with the addition of a rain sensor that shuts the irrigation system off when it is raining. Further improvements can be made by linking a controller to a flow sensor and a master valve that can automatically shut the system down if it detects a flow rate greater than programmed. High flow rates are indicative of broken pipes, control valves stuck in the on position, or other abnormal operations.

High-end smart controllers are linked to an on-site weather station or to a data service providing local weather information that is fed to the controller by automatic download via a phone modem or wireless transceiver. The result is a controller that automatically adjusts its watering cycle to match calculated plant demands based upon the anticipated evapotranspiration (ET—water loss from the soil by evaporation and from the plant through its leaves). Note that ET controllers relying on downloaded data from third-party providers do incur a minor cost for the data access subscription.

Many such controllers now offer a web-based interface that allows management personnel to monitor system status, respond to problem alerts, and program the system from any computer, smart phone, or personal data assistant linked to the Internet.

Drip Irrigation: After tightening-up the performance of your conventional overhead irrigation systems, the next level of water conservation is generally to convert portions of the site to drip- or micro-irrigation systems. Drip irrigation is far more efficient in delivering water to plants however drip irrigation requires a shift in one’s maintenance routines.

First, in the absence of readily visible spray, a plugged or damaged drip emitter may escape notice until the plant it waters is well into decline. As a result, drip systems generally require close monitoring and frequent flushing.

Second, many drip systems rely on the use of soft polyethylene distribution tubing. Such tubing can fall victim to rats, possums, or squirrels. Aside from the water wasted through gnawed holes, debris can enter the tubes and plug the emitters. It is advisable to avoid poly tubing in areas where there may be vermin.

Use of Reclaimed Water: Conversion from potable water to reclaimed water is an advanced approach to water conservation. This option is limited to areas with the infrastructure in place to deliver this type of water to individual properties.

Reclaimed water irrigation systems are generally more expensive to install due to strict guidelines on materials and precautionary measures to prevent drinking or accidental cross-connection with potable water systems. Installation costs aside it is generally possible to purchase such water at a significantly lower unit price.

Implementing strategies such as these can deliver significant cost savings in water use. They also improve plant health by matching water application more closely to actual plant needs.

Sub Metering: Note also that some municipalities levy sanitary sewer fees based on water use assuming that all the water coming on to a site is leaving that site via the sanitary sewer system. In such municipalities it may be possible to reduce sanitary sewer fees by metering irrigation water use separate from building or process water use.

Feed Me!

In their native environment most plants are able to satisfy their nutritional needs from the soil, water, air, and active microorganisms in the soil in which they grow. This ecological balance is generally the result of years, if not centuries, of gradual evolutionary adaptation. Most humans see soil as nothing more than an inert substrate in which plants grow. In actuality, healthy soil is a dynamic environment where complex chemical reactions and exchanges occur at a microscopic level within the soil matrix facilitated by beneficial fungi, worms, insects, and the plant roots themselves. These interactions within the soil occur slowly over time and help to build soil structure and stabilize soil chemistry.

In our efforts to create the "built environment", we often specify programs and procedures that run counter to these natural systems. For example, the high levels of soil compaction necessary for stabilizing building foundations or areas under pavement result in reduced soil pore space, stymied root growth, inhibited water percolation, and diminished ability for air, water, and nutrients to reach plant roots.

Plants struggle in compacted soils but can benefit from simple actions designed to get air and water down into the root zone. It is possible to improve water penetration and air exchange by carefully excavating trenches or drilling holes strategically throughout the active root zone of affected trees or shrubs. The trenches or holes are backfilled with bark, coarse sand, or small gravel. The pore space of the backfill allows water and air to penetrate into the active feeding areas of the root zone, improving plant health and therefore resistance to disease and pests.

Turf areas affected by compaction benefit from aeration. Turf aerator equipment typically penetrates through the turf to the soil below. Each aerator tine removes a plug of soil and leaves a passage by which air and water can penetrate into the turf root zone. Aeration promotes deeper root growth leading to healthier turf that is more resistant to disease, drought, and pest damage. Top-dressing the aerated turf area with coarse sand or a sand and bark blend helps the cored holes retain air and water penetration.

Similarly, our misunderstanding of soil dynamics often leads to the implementation of generic fertilization programs resulting in under or over-fertilization that can harm the delicate balance between soil, roots, and beneficial soil-borne organisms.

Supplemental fertilizing may be required. Before applying fertilizers based on manufacturer's recommendations or arbitrary seasonal schedule, it is advisable to have the soil tested. Soil testing can reveal what nutrients are available or missing from the soil and indicate soil conditions such as salinity or pH levels that may prevent plants from absorbing available nutrients. Knowledge of conditions in the soil may lead to the use of less costly soil conditioners or a more appropriate and cost-effective fertilization regimen.

Once an appropriate fertilizer program is determined, it may be possible to reduce labor costs by applying fertilizer to the landscape areas through the irrigation system. Many "Fertigation" systems place the injector at the primary point(s) of connection to the main irrigation supply. This would seem to be the most effective location as it introduces the fertilizer into the irrigation system upstream of all plantings. The problem is that not all plantings require the same level or type of fertilizer. Thus, the system may over-fertilize some areas or under-fertilize others. Further, many of these types of large volume injectors rely upon expensive precision chemical pumps drawing a soluble liquid fertilizer from a reservoir tank. Aside from the initial installation cost, the calibration and maintenance of the injection pump, the mixing of the fertilizer solution, and the maintenance of the reservoir agitation unit typically slips into the "deferred maintenance" category and the system is abandoned in favor of more traditional, though more wasteful, broadcast fertilization with solid, prilled or granular products.

Recent innovations in fertilizer injection systems have resulted in the compact systems that can be installed on a zone-by-zone basis. These systems allow you to tailor the fertilizer program to the specific needs of the plantings on a zone by zone basis. Some units are capable of precision micro-dosing, which reduces the likelihood of over-feeding plants or promoting excessive growth even when fertilizing with each irrigation cycle. In addition, some

units utilize solid, granular fertilizers, which simplify the filling and storage of fertilizer compounds. Lastly, many units are operated by the flow of water passing through them so they require no electricity. The strategic installation of such units in landscape areas with higher fertilizer demands can lead to improved growth while decreasing maintenance labor and material costs and reducing the risk of fertilizer run-off into storm drains, wetlands, or water bodies.

Let's Do Mulch

Mulch is an underappreciated garden element that is used widely as a decorative ground cover beneath and between plants. Mulch serves a number of purposes. It can moderate soil surface temperatures (hot or cold). It helps to retain soil moisture; and it can reduce soil erosion. Mulch can provide a protective ring around trees in lawn areas, and it can reduce weed infestation. Mulch has long been produced from forest products such as chipped or shredded bark, or pine straw. Desert areas with limited access to forest products or where windy conditions might result in lighter products being blown away are frequently mulched with mineral aggregates such as decomposed granite, crushed rock or volcanic cinder, gravel, cobbles, beach pebbles, and so on.

Wood products are subject to gradual decay through natural processes; and typically require an annual supplemental application. Mineral products do not typically require annual replenishment, and so will not be discussed in any detail here.

The use of forest products for mulch is both costly and environmentally suspect. Further, nugget-type bark mulches tend to be easily displaced by heavy rains and often end up in, or blocking, storm drain inlets. Over the last two decades many alternative mulch products have been introduced. Many of these newer products use recycled materials and should be considered from both an environmental and a cost-savings standpoint.

Recycled, composted "green waste" mulch is generally created by uniformly chipping and screening everything from grass clippings through stump grindings and then allowing them to compost. The composting process darkens the color of the mulch and heats the mulch sufficiently to kill latent weed seeds. Green waste mulch is less expensive than forest products but product quality can be highly variable. Ask for samples before purchasing to confirm the look, smell, and texture of available mulch products in your area.

The ultimate in sustainability is to screen and compost one's own plant trimmings onsite for reuse as mulch. This is a win-win situation provided that there is an appropriate space available for composting the materials. Facilities services groups using in-house maintenance personnel will want to consider the costs of chipping and screening operations as well as the labor required to periodically turn over the composting material to achieve uniform composition and color. Properties with outsourced maintenance should explore this option with their landscape maintenance contractor. Implementation of this level of recycling saves the cost of trucking and disposing the green waste off-site only to have someone charge you to cart it back onto the site again later.

Recycled industrial wood waste is another environmentally-friendly source of mulch. The source material is generally construction scraps or pallets or packing crates. The resulting mulch is the least expensive of the recycled materials as it is generally not composted. In terms of its appearance it is typically very light in color and course, and jagged in texture. A number of suppliers have introduced dyed versions in earth tone colors that soften the otherwise raw appearance. Because the product has not been composted it has a slightly longer life cycle between replenishment operations. For example, the use of dyed mulch will typically permit you to replenish every eighteen months instead of every twelve which equates to saving one mulching operation every three years.

Recycled rubber tires have also made their way into the landscape market as an inorganic mulch product. The colorfast product is generally sold in its natural black color or dyed earth tones. This product lasts like mineral aggregates yet looks like organic wood products. The installation cost for this product can be higher than that for mineral aggregate products.

Green Waste Reduction

The move toward recycling green waste developed in response to the tremendous volume of trimmings entering landfills from landscape maintenance operations. Green waste represents a real cost to the maintenance operation as it must be periodically collected and removed from the property. Thus, any reduction in green waste serves as both a cost-cutting and a sustainability strategy. Green waste can be reduced through careful plant selection and by using any technique that decreases the amount of mowing, trimming, or pruning.

Fertilizer Control: Avoiding excessive fertilizers, especially high-nitrogen fertilizers, can increase the amount of plant growth. Depending on soil properties and the species of turf, you should consider slow-release or organic fertilizers that can maintain turf color but with only slow-to-moderate growth.

Mulching Mowers: Mulching mowing equipment has been available for a number of years. These mowers slice and dice grass clippings into sufficiently small particles that readily sift down into the surface of the lawn where they can decompose over time. Mulching mowers do not accumulate clippings in bags or hoppers and, when used properly, do not leave windrows of clippings behind. For effective use, the lawns must be dry at the time of mowing and mowed at a reasonable height. Minor leaf litter and small twigs from adjacent shrubs or trees within the lawn area can (within reason) be effectively mulched into the lawn surface during the mowing operation, saving the labor that would be needed to rake, blow, or vacuum such detritus.

Plant Growth Regulators: Plant Growth Regulators (PGRs) are a class of safe landscape chemicals that suppress plant growth at a cellular level. Depending on plant species, timing, and the rate of application, these synthesized compounds can reduce trimming labor by fifty percent or more[7]. The use of plant growth regulators, as with all chemicals, should be undertaken only by trained and certified professionals and done in strict accordance with the manufacturer's label recommendations.

Pruning and Trimming

Tree Pruning Practices: Other than bad lawn care, nothing can depress the curb appeal of a property like bad pruning. Words cannot capture the horror of viewing trees that have been blunt-cut back to major branches. Equally appalling are trees that have been neglected or under-pruned for years and have become lopsided, or developed a weak structural scaffold or a matted tangle of branches.

Different species of trees have different growth habits. Landscaping design should understand and respect those growth habits. Nonetheless, it is not uncommon to find the wrong tree in the wrong place—creating problems ranging from power line interference to pavement heaving, to the dropping of leaf, flower, or fruit where it is not wanted. Careful tree selection during the design phase can help reduce long-term landscape maintenance problems, including green waste production.

Blunt cutting trees back to major branches results in an explosion of growth at each avulsed branch. A more effective pruning technique is to selectively remove branches by the "drop-crotch" method. This method does not necessarily reduce the overall size of the canopy. Rather, it builds a strong scaffold of branches, opens the canopy up for light and wind penetration, and reinforces the tree's natural growth tendencies.

Pruning is an art that must be backed by a thorough understanding of plant physiology such as by an Arborist certified by the International Society of Arboriculture (ISA). Bad pruning fights against the natural predisposition of the tree. Good pruning works with it. Good pruning brings out the beauty and utility (shade, screening, flower, or fruiting) of each tree. Good pruning with properly placed cuts, properly timed, can reduce the overall amount of pruning needed, the frequency of pruning, and the amount of green waste generated throughout the season. Pruning with an eye to the tree's structure decreases the likelihood of major limb loss from storm damage. Pruning a tree to open up its canopy can reduce wind resistance and reduce the potential for toppling over during strong wind storm events.

[7] VanBibber, Laylah, Putting the Numbers to PGRs, Grounds Maintenance, May 1, 2006

Shrub Trimming Practices

Shrubs serve a variety of roles in the landscape. Some are accents, grown for foliage color, shape, or texture, while some serve as geometric design elements such as parterre hedges or topiary sculptures. Some shrubs serve to define space as sheared screens or informal hedgerows that become impenetrable fences. Some shrubs are also used as ground covers to stabilize soil and protect or direct watershed.

As with trees, different shrubs have different growth habits. Proper selection of the right shrub for the right area is critical in predicting how and how much that shrub installation will be maintained. Many factors must be considered in making shrub selections, such as the role the shrub is to play; the space available for the shrub to grow; the suitability of its exposure; the suitability of the available soil; water demand, irrigation source and type; any potential drainage or sub-drainage issues; accessibility for maintaining the plant (including issues of worker safety and the carting off any trimmings produced); and any secondary effects of leaf, flower, or fruit in the context of the installation (toxicity, attractiveness to pests or diseases, and so on).

The density of planting is another design consideration that impacts the long-term maintenance of shrub areas. Initial cost, speed of growth, degree of slope, and curb appeal can all influence how a shrub area is designed and specified. Depending upon the species, it can be less costly to install fewer large shrubs at a wider spacing than it is to install more small plants at tighter spacing. Further, closely-set plants may require thinning over time, thereby incurring added labor, equipment, and the generation of green waste.

Lastly, shrubs designed as bold masses or naturalistic drifts have an uncanny knack for morphing over time into surrealistic arrangements of spheres and cubes. This phenomenon is the result of the well-meaning but misguided use of power hedge trimmers where selective pruning with hand shears would have been more appropriate. Shearing is a valuable tool for the creation of formal hedges and geometric shapes, however repeated shearing creates a dense outer cowl of brushy foliage that shades the inner limbs and twigs leading to their defoliation. If ever the outer leaves are cut back, large voids in the foliage will be exposed.

Shrubs growing individually or in informal massing or drifts should be trimmed back to major limbs rather than sheared near their tips. This approach builds structure, allows air and light penetration, can reduce the overall amount of green waste produced, and is usually more closely aligned with the original design intent.

Weeds

Weeds are nothing more than plants in the wrong place. Most weeds are highly adaptive, invasive species that germinate readily and are capable of exploiting the worst soil conditions. While preventing weeds is impossible, controlling them is achievable and can be accomplished by a variety of approaches. The most effective, but most labor intense, way to kill weeds is to pull them out (roots and all). While weed pulling seems environmentally ideal, it may actually increase the potential for erosion. A more efficient method is to spray the weeds with an approved herbicide. For weeds in shrub areas, the most common herbicide is a non-selective systemic such as Roundup®. Weeds in turf are more difficult in that they require a selective systemic herbicide that is capable of killing weeds without harming the grass.

It is also possible to prevent many weeds through the use of a pre-emergent herbicide. This type of product can be applied to shrub areas where there are existing, established shrubs. The herbicide resides in the pore spaces of the soil in the upper few inches where most new weeds germinate. Established plants with roots growing below the residual layer are safe.

Non-chemical approaches to weed control involve the use of mulch in shrub and ground cover areas. A 2” to 4” deep layer is typical. Deeper layers can provide greater weed suppression but can create other problems[8]l. Additionally, some weeds in turf can be controlled by adjusting the height at which the turf is mowed.

[8] Derr, Jeffrey F., Control Landscape Weeds Pre-Emergently, Grounds Maintenance, March 1, 1999

Case Study: Cisco Systems, Inc., San Jose, California

Note: ValleyCrest Landscape Maintenance Inc. is a landscape management firm specializing in commercial and institutional property maintenance. Since 1998 ValleyCrest's San Jose, California, office has worked closely with Cisco Systems, Inc. and property management firm Jones Lang LaSalle at Cisco's Northern California campus. ValleyCrest has been an active partner in developing and implementing cost savings and sustainability strategies focusing on three components: horticultural improvements; reducing water consumption; and sending less green waste to landfills as noted below:

To accomplish this goal ValleyCrest first set out to establish baseline in terms of how much water was being consumed. Additionally, an initial landscape assessment helped the team determine which plants required the most water, which plants required the most fertilizer, and what resources were being used to sustain the level of landscape on the site. This assessment revealed several areas where improvements could be made.

Cisco System Inc, - San Jose California

Jones Lang Lasalle

Measured current and historical data to arrive at baseline performance data in each identified area

Implementation Across Three Areas of Identified Potenial Gain

Labor Burden Reduction	Water Consumption	Green Waste Reduction
Strategy Reduce planting density Remove high maintenance plants Convert seasonal color to shrubs Remove understory ground covers Convert areas of turf to shrubs	**Strategy** Tune-up irrigation system uniformity Install Smart Controllers Convert seasonal color to shrubs Remove understory ground covers Convert areas of turf to shrubs Shut off fountains Remove select fountains*	**Strategy** Reduce planting density Remove high maintenance plants Convert seasonal color to shrubs Remove understory ground covers Convert areas of turf to shrubs Use mulching mowers Divert green waste to recycling
Results Reduced maintenance labor cost Reduced equipment run times Reduced greenhouse gas emissions	**Results** 24% reduction in irrigation water use 4 million gallon reduction from fountain shut down 1.2 million kwh reduction in electricity from fountain shut down	**Results** Reduced green waste production Reduced green waste haul away Reduced trucking Reduced greenhouse gas emissions

In addition to the landscape-related strategies noted in the chart above, four dozen fountain water features spread throughout the campus were shut off, with seven of them converted to shrub beds. The average water feature on the campus had consumed 87,350 gallons and 24,528 kilowatt hours of electricity each year. The savings from not running those fountains added up to over four million gallons of water annually.

The combination of these actions helped to lower Cisco's average irrigation water usage by approximately 30% per year and were a key strategy in Cisco's ability to reduce its overall water consumption at its California facilities by 81 million gallons a year

Additional steps taken to reduce green waste included the use of mulching mowers and species-appropriate tree pruning programs. A pilot program has recently been evaluating the efficacy of using the green waste collected on-site as part of the ongoing mulching regimen.

Case Study – Majestic Realty, Aurora, Colorado

Similar to the Cisco Systems Inc. case study, Majestic Realty worked with their landscape maintenance provider (ValleyCrest) to implement strategies that would reduce irrigation water consumption to variously reduce costs or mitigate water cost increases. Irrigation in the Aurora Colorado region is a seasonal need so the achievements were tracked across the six month window when landscaping requires supplemental irrigation. ValleyCrest retrofitted "smart" controllers that utilize uploaded evapotranspiration data to make daily adjustments to the watering cycle of each irrigation zone. The evaluation was conducted on two buildings with measurable water savings as noted in the chart below:

Majestic Realty - Aurora, Colorado Tracked Water Use Before and After Water Savings Retrofit	
Implementation Across Three Areas of Identified Potenial Gain	
Loreal Building	**Himalaya Building**
Strategy Tune-up irrigation system uniformity Install Smart (ET) Controllers	**Strategy** Tune-up irrigation system uniformity Install Smart (ET) Controllers
Results 21% reduction in irrigation water used (2007 over 2006) Rate increase resulted in slightlly higher total cost in spite of reduced consumptoin. 486,000 gallons saved over 5 month period	**Results** 40% reduction in irrigation water used (2007 over 2006) $2,127.00 saved over 6-month irrigation period 1,132,000 gallons saved over 6 month period

Metrics

It has been clearly demonstrated that tangible cost savings can be achieved through sustainable landscape design and maintenance practices. However, the amount of savings is often hard to pin down because measured results tend to be highly variable. The reality is that landscapers are working with a perishable commodity in a natural environment that is constantly changing. Still, there are aspects of landscape maintenance that can be readily measured and tracked, and the resulting data can serve to both validate sustainability programs and guide ongoing landscape management decisions.

Among the most important results of a strategic landscaping program are:

- reduced irrigation water use;
- reduced green waste production;
- reduced use and disposal of harmful landscape chemicals;
- reduced landscape labor costs or landscape contract monthly costs; and
- reduced fuel for maintenance vehicles and equipment

What You Can Measure You Can Manage

Draft a basic outline program centered on a comprehensive look at landscape maintenance programs and their material and energy inputs and their resulting waste streams. The key steps to follow include:

Identify and attach costs to reduction programs for every element in the landscape maintenance supply chain and waste stream.

Establish threshold cost/benefit levels for each item. Some things that would be cost-effective for some locations may not be for other locations. Nonetheless, if you oversee a portfolio of many different properties, you should identify the desired metrics and aim for some degree of universal application, trusting that technology or repetitious use will eventually level out the economics across all locations.

Focus in a progressive manner on tackling, in order, first the “easy/cheap,” then the “moderate/tolerable,” and finally, the “difficult/costly” problems over a predetermined time period. Early measurable successes with tangible cost savings should lead to property manager and employee, or tenant buy-in.

Tighten the goals or raise the thresholds progressively over time. Today’s facilities managers are often caught between the twin forces of fiscal performance and the external environmental mandates of government agencies. Within the scope of landscape management there are strategies whereby you can accomplish both goals. The key is in knowing the basics outlined here, and knowing when and how to engage your Landscape Architect or Landscape Services Provider to assist.

Results

Rethinking the landscape is unlikely to enhance your firm’s revenue stream, however, it will lead to tangible and easily-measured savings in key areas outlined in this chapter.

Playbook for Implementation

Preparation: Steps to get ready

Obtain all available data on the property, including original design drawings, as-built drawings, specifications, and annual summaries of all relevant costs associated with the landscaping, including electricity and water usage. Create a spreadsheet or similar analysis for determining the baseline performance and listing the costs in the major categories identified above.

It may be possible to obtain annual summaries of water use, electricity, and green waste haul-off from the vendors providing those items. If the water or electricity tied to irrigation cannot be isolated from the overall property records, consider adding sub-metering into the future plans to allow for such tracking.

If your property maintenance is outsourced to a landscape maintenance contractor, call a meeting with that contractor to lay out your goals, solicit input, and obtain support for the initiative. Provide the contractor with copies of all of the reference documents you are able to collect. Keep in mind that even if you have never managed this type of a program, your contractor may have.

Similarly, the landscape architect who prepared the original design drawings may have expertise on staff to help organize a process by which to reduce costs and/or improve environmental sustainability. Don't be afraid to leverage these assets, especially if you have already had to make staffing cuts.

Explore and identify any public agency or public utility-sponsored tax incentives or rebates for sustainable retrofits. Become familiar with the documentation needed to take advantage of such programs.

Six-Month Calendar

Inspect, test, and prepare a detailed estimate of equipment and costs needed to bring the site irrigation system up to modern and efficient standards. Initial improvements should include the standardization of irrigation equipment and basic improvements to the uniformity of irrigation coverage across all landscaped areas. This goal can be accomplished by adding or deleting sprinkler heads, and by the use of matched precipitation rate nozzles, low head anti-drain valves, and the repairs of any leaks or defective equipment.

If they are not already in place, install rain sensors at each controller and a flow sensor and master valve at each irrigation point of connection with controller wiring and interfaces as needed.

Verify availability of evapotranspiration (ET) data for a "smart" irrigation controller. Using site data and/or original planting plan data compile all needed information for programming the controller. Install and program the smart controller and link it to the ET data provider.

Next 20 plays

Carry out the landscape assessment process. Identify primary, secondary, and tertiary landscape areas and rank the plant materials within those areas. Review with the landscape architect, landscape contractor, management, and/or tenant as applicable to get buy-in on proposed changes. Formalize the proposed changes into an overlay of the existing site.

Create a schedule for where, when, and how you or your contractor will implement any changes developed out of the landscape assessment process. Be sure to communicate the schedule to all affected parties along with the reason and importance of the work. Keep pushing for buy-in, but don't rush to take on work in a manner that incurs any cost premiums. Perform retrofits during seasonal slack times or where convenient and practical along with other routine or scheduled work activities.

Once the landscape assessment plan is finalized, documented, and translated into a schedule, begin working on the individual plan elements in strict accordance with the schedule. Keep in mind that depending upon the age of the site and whether or not interim changes have ever been made to the site, the accuracy of any as-built drawings of record (if they exist) may be suspect. Be sure to coordinate

with building superintendent(s), other contractors, and utility companies to verify underground utilities. Excavate test trenches as needed to reach a level of comfort. Know where all the shut-offs are in case you are uncertain about what is below the surface.

Include periodic reviews, first to chart progress against the schedule, and second to evaluate actual outcomes against anticipated ones. Don't be afraid to make changes in the program, provided that the changes remain true to the overall program goals. As the sustainability movement grows, new technologies and materials may become available, and it is important to be aware of anything new that might serve the program goals.

Note that as the Cisco case study demonstrates, measurable results will not be immediate in all areas. While you will likely see immediate improvements in irrigation water use or mowing labor (if you take turf areas out of service) you may not see savings in such areas as weeding reductions, pruning reductions, and mulch reductions for at least one full season. Further, it will be important to separate the cost of the retrofits from the costs of routine maintenance in order to measure performance against the baseline versus any efficiency gains from the retrofit operation.

Audit Procedures

Landscape sustainability goals should be established by management with the same level of enthusiasm as they set quarterly sales and profit targets. Performance goals should be progressive as a reflection of management's belief in continuous improvement. Progressive goals predispose a firm to continuously explore new technologies as a means of improving efficiencies in addition to management innovation, as both will be required to achieve long-term sustainability.

Oversight of the various programs should be the responsibility of a senior facilities or asset management professional. Achieving desired results will be the responsibility of individual property managers, who must retain considerable flexibility in how they achieve their goals to accommodate differences in geographical location, market conditions, work type, equipment utilization, and other variables facing each operation.

As a policy, environmental sustainability should promote the long-term business benefits and return on investment of environmentally sustainable operations, materials selection, and equipment choices. Environmental programs should function similarly to, and in concert with, a firm's Safety Program and Continuous Improvement Programs. Indeed, when properly approached, these three areas of endeavor are complementary if not actually synergistic.

Resources

Web sites

Websites can be a wealth of information. Given the ever-increasing number of commercial, academic, non-profit, editorial, "e-zine", personal, and professional blogs and social networking sites, it can be a bit daunting to track down, much less verify, valid information from the Internet. The following is a small sample from hundreds of sites with relevant information on landscape maintenance, sustainable development, and everything that links those two interests together.

www.facilitiesnet.com Companion website to Building Operating Management magazine and affiliated publications. Site includes links to companion magazines, webcasts and training webinars, and networking opportunities.

www.isa-arbor.com International Society of Arboriculture website. Site includes consumer education and searchable directory of ISA members and Certified Arborists

www.landscapeonline.com Companion website to a family of magazines targeted at landscape designers, installers, and maintenance professionals. Site contains links to articles by and about legislation, landscape firms, landscape projects, new products and systems, individual case studies, and ongoing research.

www.sldi.org Website for the Sustainable Land Development International organization, a member-owned organization dedicated to promoting sustainable land development around the world. Members come from all facets of the land development continuum including land acquisition, investment, survey and testing, planning, design, engineering, construction, maintenance, government, and academia

www.usgbc.org Website for the U. S. Green Building Council and wealth of information on the Leadership in Energy and Environmental Design (LEED®) programs for improving the performance of built structures, whether new construction (NC) or existing buildings (EB)

www.waterefficiency.net Companion website to Water Efficiency magazine, a journal for water conservation professionals.

www.weathertrak.com Website for HydroPoint Data Systems, Inc., a pioneering firm in developing "Smart" irrigation controllers. Includes links to calculators to assist in computing potential water and related cost savings.

Books

There are many books available on landscape management and on the environmental implications of landscape management practices. The books listed below are good general resources on the subject.

Stu Carron, Bryna Dunn, et al, Existing Buildings: Operations & Maintenance Reference Guide, U.S. Green Building Council, 2008

Kelly Duke, et al, "Part 3, Process, Implementation, and Application, Plant Maintenance", Architectural Landscape Graphic Standards, Leonard J. Hopper, RLA, FASLA, Editor, pgs 673 thru 691, John Wiley & Sons, 2006

Andrea Keenan and Danielle Georges, ed. Green Building: Project Planning & Cost Estimating, R. S. Means, Kingston, Massachusetts

Charles Kibert, Sustainable Construction: Green Building Design and Delivery, 2nd Edition, John Wiley & Sonds, Inc., , 2008

Ross Speigel and Dru Meadows, Green Building Materials: A Guide to Product Selection and Specification, 2nd Edition, John Wiley & Sons, 2006

Daniel E. Williams, FAIA, Sustainable Design, Ecology, Architecture, and Planning, John Wiley & Sons, 2007

Periodicals

In addition to books, there are many magazines tailored to specific technical, operational, or managerial niche interests. Several of these are supported solely by advertising and are made available to professionals at no cost. The technical, editorial, and advertising content can all contribute to one's understanding of the inter-related complexities of landscape management and environmental stewardship. Many of the publications listed below are linked to websites noted above.

Building Operating Management, Trade Press Publishing Corp, Milwaukee, Wisconsin

Sustainable Land Development Today, Sustainable Land Development International, Dubuque, Iowa

Water Efficiency, Forrester Media, Inc., Santa Barbara, California

Getting Started – What to do Right Now

An action plan

Purchase the U.S. Green Building Council's book Existing Buildings: Operations and Maintenance Reference Guide. Whether you decide to pursue LEED® certification for your property or not, the book is full of good strategies for improving the environmental footprint of your facility. Study the book along with this chapter and establish your long-term and intermediate goals and timeline milestones for achieving them. Don't let best be the enemy of better. If you focus on getting to better, you can always shoot for best later.

Selling the idea to senior management

On your own or with your landscape architect or landscape contractor, develop a detailed cost estimate of all proposed renovation/retrofit improvements. Then develop an estimate of the anticipated cost savings in water, fertilizer and related chemicals, mulch material and all associated labor over the next three years. Include in a narrative description how and where the proposed program enhances the facilities environmental sustainability profile.

Direct senior management to the available literature from the U.S. Green Building Council (USGBC) regarding available data relative to higher rental incomes, improved employee productivity, and reduced energy and water use in sustainable facilities:

Finally we're going to go inside the building. Wow! And you thought you'd never get there. But that reaction illustrates one of the important lessons of this book: as a facilities manager in the current economy you need to look at your domain and your responsibilities with a completely different perspective. And this chapter on landscaping has provided a different view. Right?

Okay, now we (finally) turn to the "the office" itself. The next chapter includes a detailed case study of what you can do today—and tomorrow—to radically affect the cost of giving working people a place where they can actually do what the company needs them to do. Or maybe, just maybe, they don't really need to be in the office all the time. . .

ABOUT THE AUTHORS

Kelly F. Duke

Kelly Duke began his landscaping career mowing lawns during summer breaks during high school. Kelly parlayed his hands-on knowledge into a thirty year professional career that has touched such widely diverse projects as The Getty Center in Los Angeles, Disney's Animal Kingdom in Orlando, and the 1996 Summer Olympic Games in Atlanta, Georgia.

When not consulting on major landscaping projects, Kelly has taught courses on landscape contracting, cost estimating, and landscape management problem solving as adjunct faculty in the Plant and Soil Science Department at the California State Polytechnic University in Pomona, California.

Pre-Construction Services

•Leads teams in the preparation of preliminary budget estimates to assist customers and their design teams make key decisions regarding design direction, materials selection, life cycle costs, and sustainability options early in the design phase.
•Participant in LEED® and Estidama strategy sessions on multiple public and private-sector projects in the US and the UAE.

Sustainability Initiatives

•Overseeing ValleyCrest's development of a corporate environmental policy aimed at improved performance through benchmarking current performance and instituting managerial incentives for reductions in energy, fuel, and water use reductions.
•Responsible for sustainability education and LEED® training programs within ValleyCrest's construction division.
•Invited panelist on the subject of Advances in Green Roof Construction and Maintenance at the American Society of Landscape Architects' annual conference in Philadelphia in 2008.

Matson Walter

Matson Walter brought his broad range of design and management experience to Melendrez in 2004. While at Meléndrez, his successfully completed projects include the award winning Santa Monica College Quad, Los Angeles Police Administration Building, Pasadena Convention Center Expansion, and Symantec - Culver City. These memorable places are the result of high-level integration and collaboration among owner, users, architects, planners, engineers and designers.

Meléndrez is a Los Angeles-based landscape architecture, planning and urban design firm dedicated to improving the quality of life in the urban environment founded by Lauren Meléndrez over 24 years ago, inspired to apply her vision and passion for landscape architecture to solving urban challenges. Today the firm's leadership team carries the firm forward in new directions, while remaining rooted in three core enduring firm values: context, people, and impact.

As designers we seek to understand the physical, social, cultural, historic, environmental and economic dimensions of the places in which we work. We are keenly aware of and connected into the regulatory and political contexts within the communities in which we design. We evaluate places' functions and activities, and keep our focus on the people who live, work and play in them. We engage and communicate with the communities in which we work, in multiple languages, and using a range of location-specific methods. We believe that high quality inspired planning, landscape architecture and urban design can create tremendous value for clients and end-users. Our goal is to create memorable places that are timeless and precious assets to the communities in which they exist.

5 Chapter Five

The Office: A New Look at an Old Friend

So far we have talked about real estate portfolio strategy, moving beyond LEED standards, lease tactics, travelling to the workplace (or not), and exterior landscaping enhancements. This chapter continues our journey by turning inward to the workplace itself; we now look at how facilities managers can begin making a difference quickly, inside the "cube farm" (and outside it). This perspective is critically important, because, as one facilities manager (our own Diane Coles) put it to us, "It's easier to think outside of the box when you're not in it."

We offer a powerful message: there's a huge opportunity for saving costs by rethinking the way employees use—and are provided—company-provided workspaces. For literally decades the basic assumption has been that every employee gets an assigned space, whether he or she occupies it 100% of the time, or 10% (or less). It's time to rethink everything about how you use both space and office equipment to support your workforce.

Charles Grantham Ph.D. and James Ware Ph.D.
Work Design Collaborative

The Idea in Brief

- It's time to rethink the way we house and support knowledge workers. The office should no longer be taken for granted. Today a creative workplace strategy can be a major source of both cost reduction and productivity improvement.
- Work-at-home and mobility programs enable companies to reduce their space needs significantly, while also increasing occupancy density.
- Facilities managers can reduce their cost of designing and provisioning corporate office facilities through creative rethinking of the business processes they use to manage their operations.

The Idea at Work

- If you design and deploy a mobile work program emphasizing performance management you can achieve a return on investment of 40% or more, increase workforce productivity, and reduce unwanted worker attrition.
- A mobile work program that enhances your company's ability to measure and manage workforce performance will both reduce workforce support costs and increase corporate agility.
- This approach is inherently interdisciplinary. It involves, indeed requires, collaboration among Workplace Services, IT, and HR professionals.

Executive Summary

This chapter includes two separate but thematically similar case studies; first we describe a major re-design of a "standard" corporate office environment at SCAN Health Plan.[1] We follow that with a brief story of how Steelcase transformed one of its own work areas, which houses Steelcase's Global Supply Chain Management department.

SCAN Health. The focus of SCAN's redesign process was to (1) reduce the cost of occupancy; (2) improve employee satisfaction with the work environment; and (3) provide a more agile workplace to accommodate future needs.

The project deployed three strategies simultaneously. First, the development of a "work at home" program enabled the company to consolidate the real estate portfolio and enable greater density in the re-designed space. Second, the remaining space was re-designed by shrinking and—in many cases—eliminating private offices, concentrating storage space, and providing standardized "neighborhood"-based work areas. Lastly, an innovative "policy in pictures" process was developed that helped to engage employees in the workplace design and provisioning process.

[1] http://www.scanhealthplan.com

The results of the transformation project were measured over an 18-month period; they included the following:

- 40% return on investment of funds for the program development and deployment
- 38% reduction in cost of workplace support
- 18% increase in productivity
- reduction in provisioning time from 12 weeks to 3 days
- decrease in travel to work by 20% for program employees

Both SCAN's experience and Steelcase's demonstrate that prudent investment in new design and provisioning processes can contribute directly—and almost immediately—to the corporate bottom line. In addition, facilities management can (and should) lead the development of a strategically-focused real estate operation that can be adapted to corporate needs as companies contract their workforce, expand into new market areas, and/or place more emphasis on attracting and retaining talent, as opposed to a more narrow cost-optimization approach.

The AWESOME Project at SCAN Health Plan

SCAN Health Plan was founded in 1977 by a group of seniors who were frustrated by their lack of access to medical services and who wanted an organization that addressed their specific needs. These forward-thinking senior citizens formed the "Senior Care Action Network," now known as SCAN Health Plan. The overarching goal of the organization then was the same as it is today: to continue to find innovative ways to enhance seniors' ability to manage their health and to continue to control where and how they live.

The mission of SCAN's facility management organization is providing leadership in the integration of real estate, information technology, and human resource assets. This role is somewhat unusual for a facilities management function. However, the Executive Team has explicitly tasked the department with that goal. The department's basic objective is to reduce overall operating costs while preserving the capability of the organization to attract and retain key talent today and be prepared for the future.

The SCAN Health Plan Workplace Services department led a fundamental re-shaping of the way the company's work environment is designed and managed by bringing together SCAN's Human Resources (HR) and Information Technology (IT) departments with Workplace Services to jointly develop a workplace strategy called "The AWESOME Project."[2]

The project involved three major changes made at SCAN:

1. A flexible work program that now enables several hundred SCAN employees to work from home or other locations several days a week;

2. An aggressive redesign and repurposing of the workplaces within the company's corporate headquarters facility; and

3. A fundamental redesign of the process by which individual and team workplaces are configured and provisioned.

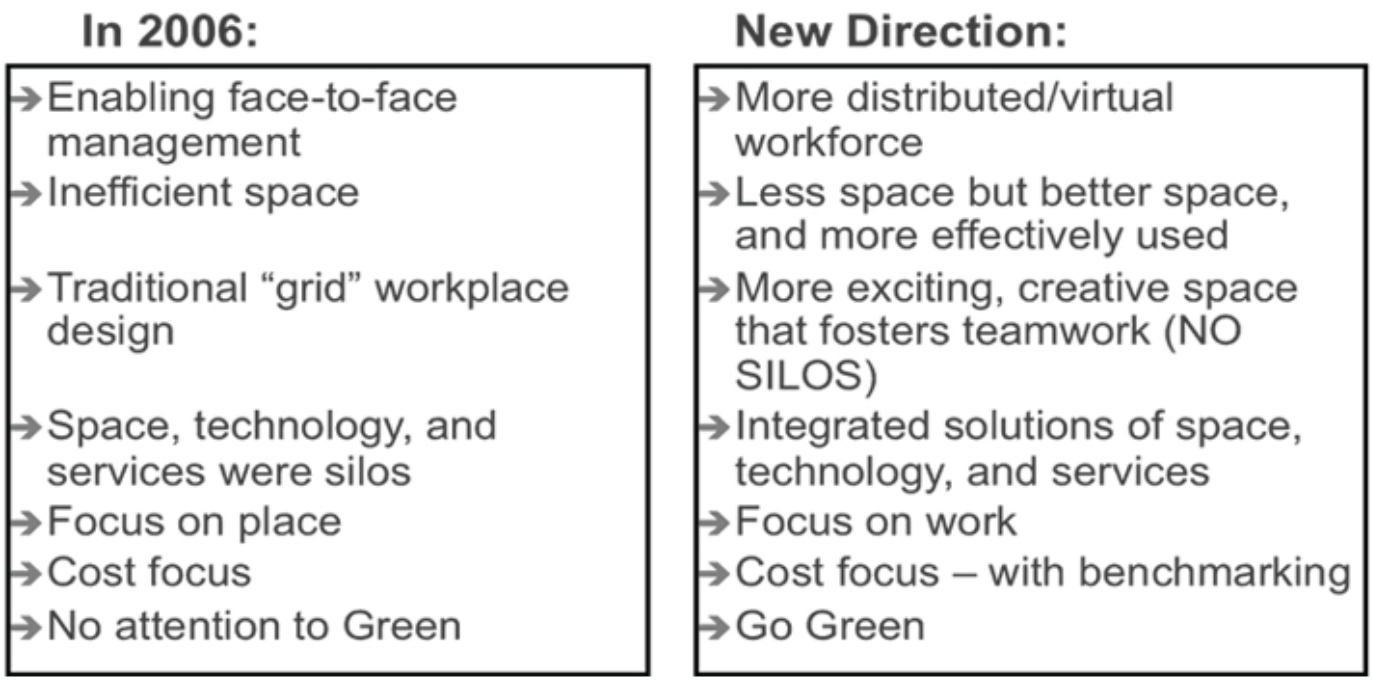
The benefits of the project are measured in three dimensions: efficiency, effectiveness and expression, which are described in following detail.

[2]AWESOME is an acronym for "Alternate Workplaces Engaging Staff & Office Management Efficiencies"

Strategic Program Design

The AWESOME project has basically changed the way facilities management is aligned with the overall executive leadership function of the company. Figure One is a summary of the shift in direction:

Figure One: SCAN's Shifting Workplace Strategy



Enabling the Work-at-Home Program

The initial pilot program, involving twenty work-at-home employees, was launched in December 2007. After careful evaluation that included workforce surveys, separate focus group meetings with work-at-home employees and their managers, and formal productivity measurements, the pilot was deemed a success by the executive team in April 2008. The AWESOME project was then launched in full force in April 2008, while the new space concept at the corporate headquarters building was approved in July 2008.

The time from when an individual expresses interest in working remotely, or "being AWESOME," to actually becoming an active telecommuter takes approximately twelve weeks. Before implementing an AWESOME program, a department manager must first complete a readiness plan that helps him or her review and change core business processes, develop standardized performance measurements, and determine technology, furniture, and equipment needs. Individuals and managers must also complete a readiness assessment.

SCAN provides AWESOME telecommuters with a desk, chair, and laptop, as well as a telephone and Internet cable service. AWESOME participants must work a minimum of two days a week at home in order for SCAN to realize the associated real estate savings. Department leaders determine the amount of days individual employees can telecommute.

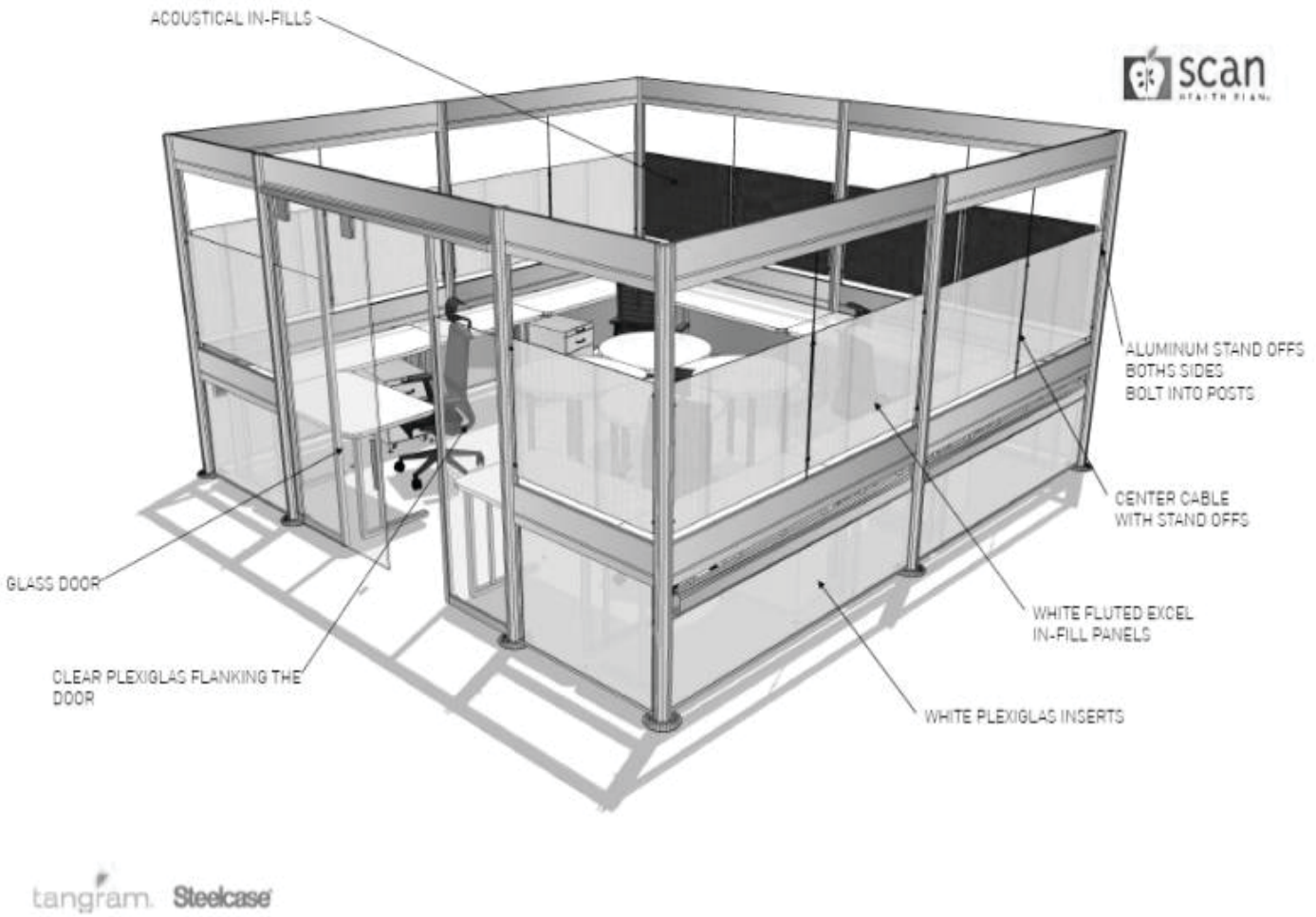
Space Concepts Redesign

After reviewing SCAN's 2012 Strategic Plan, the Workplace Services team, led by Diane Coles with expert assistance from architect Manuel Urquiza (founder and President of The Urquiza Group, Inc.), realized that the existing space design was not aligned with the corporate vision. While the executive team was interested in breaking down silos, fostering teamwork, and becoming an adhocracy, the space design fostered exactly the opposite behaviors.

A series of design charettes (focus groups) was led by the authors of this chapter (Executive Producers of the Work Design Collaborative[3]) and Manuel Urquiza. The charrettes included representatives from all the major departments at SCAN. The common themes that emerged in the charettes included the need for better acoustics and lighting, freedom of choice (in equipments and space layouts), and the ability to work anywhere. Using this feedback, the workplace services team created a "village" concept in which staff are able to move throughout different "neighborhoods," working in many different places, including "townhouses," single-occupant spaces, touchdown café's, libraries, the "post office," copy centers, and conference rooms—some of which are furnished with casual, "living room" furniture.

The townhouse is a 16'x16' square enclosure with a translucent front and sliding door. Three of the four walls are simple panels. Unlike traditional office cubicles, nothing is affixed to the walls. All furniture in the townhouse—including tables, files, bookcases, and screens—can be moved easily. Electrical, data, and voice connections are at the beltway (desk height) on the panels.

Figure Two: The "Townhouse"



[3]http://www.thefutureofwork.net

Each townhouse is a "home" for approximately four to six employees; the "residents" choose their own furniture (from an approved list) and its placement using an interactive whiteboard (Smartboard 600i series). With flexible components, a townhouse can be reconfigured within 24 hours, given that the needed components are available in stock. Using the Smartboard, departments and Workplace Services can quickly re-design a townhouse, print a picture of the layout, confer with IT, and easily make the desired changes.

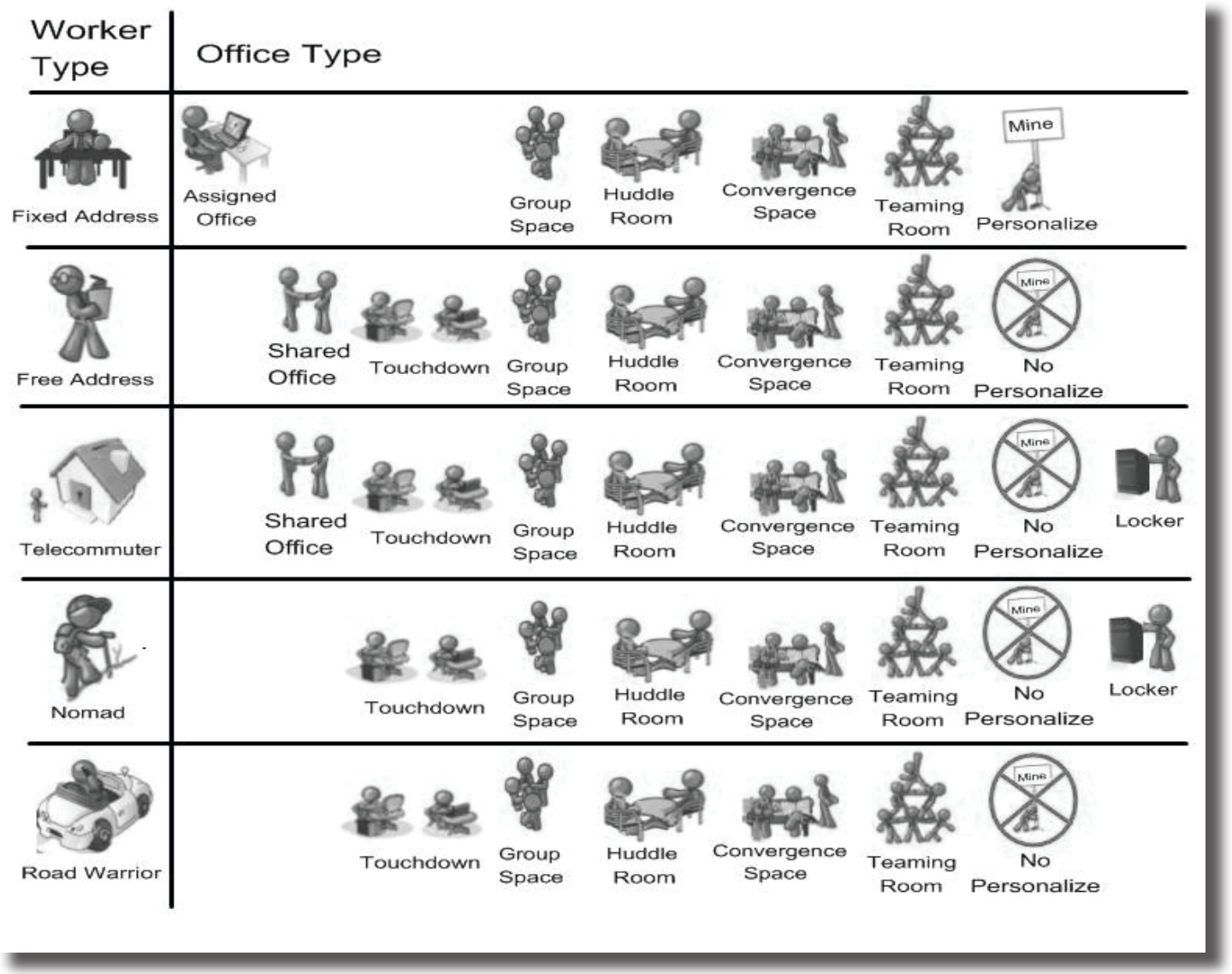
For those employees who still work full-time in the corporate facility, the power of choice in their workspace has been very well-received. This "self-design" approach has actually made the daunting task of space planning fun. Townhouse resident teams are asked to think about how the workplace configuration will affect their productivity as they experiment with the placement of their furniture. Productivity measurements are being taken regularly to improve the company's understanding of how space design impacts employee productivity.

A number of technology initiatives were also a key part of the "work anywhere" space concept; without them SCAN would not have been able to reduce its real estate costs. The technology initiatives included adding wireless technology in all offices, increasing available bandwidth, migrating to laptops from desktop computers, and offering cell phones, cordless phones, scanning, IP Softphone, web meetings, and instant messaging to most SCAN employees.

The Provisioning Process

They say that a "picture is worth a thousand words" and SCAN's new workplace policy in pictures is living proof. In order to manage the change to a "work anywhere" concept, the team created the new workplace policy (using an interactive whiteboard, or Smartboard) that almost completely picture-based. This new approach provides quicker recognition and understanding during change management sessions with departments. Once the pictures are shown, employees immediately understand the concept. Figure Three shows an example of the picture-based policies (this one links type of worker with type of office).

Figure Three: Policy in Pictures



SCAN is also piloting a "Nomads in the Workplace" program that allows approved employees the flexibility to work anywhere within a building or designated neighborhood (the Director of Workplace Services became SCAN's first Nomad in July 2008). Becoming more nomadic not only saves space and reduced real estate costs, it also helps break down silos, allowing teams to become more creative and resolve issues quickly by using collaboration areas more effectively.

The Program Details

The AWESOME program increases SCAN's flexibility to adapt to future uncertainties with health care reform. Recent healthcare legislation, and the prospect of additional healthcare reform as we go to press has made SCAN's future revenue outlook highly uncertain and more variable. The AWESOME project's contribution to reduced administrative costs has allowed SCAN to maintain its level of health care service to its 110,000-plus customers without increasing customer costs.

AWESOME "has fundamentally changed the way that SCAN looks at its business model," according to Hank Osowski, Senior Vice President, Business Development.

The project has laid the foundation for SCAN's entry into new markets by putting in place three key processes to promote corporate agility:

1. the performance measurement system;

2. working conditions that attract and retain employees in a very tight health care labor market; and

3. a more efficient, lower-cost facilities change process.

As of July 2009 there were 130 AWESOME employees at SCAN who were working a minimum of two days a week from home. However, the use of flexible space impacts all of SCAN's 950 employees. The flexibility of the new space concept coupled with the design of contemporary collaboration spaces and the power of choice in arranging individual workspaces improves everyone's productivity and fosters creativity and innovation by breaking down departmental silos. In addition, the AWESOME program has been at the heart of a subtle but important shift in SCAN's corporate culture.

The change in corporate culture over the last year resulted from aligning the workplace design to SCAN's 2012 vision by incorporating three components of the vision:

1. Breaking down silos and building collaborative spaces;

2. Eliminating bureaucratic space standards; and

3. Building spaces that foster creativity, innovation and brainstorming.

AWESOME introduced quantitative performance measurement practices into the company that are now being rolled out and adopted for all employees in all departments. SCAN's Human Resources department has now taken the lead in promoting the use of individualized quantitative measures of performance at all levels throughout the organization.

In combination, the ability to work from home and the redesign of office space due to the AWESOME project have also helped make the company a magnet for talent. SCAN now enjoys a competitive advantage in the tight health care labor market because of it offers flexible work options. Many new employees have reported that they chose to work for SCAN because of the AWESOME project. Others have said they would leave the company if they weren't allowed to participate in the program.

The re-engineering of the facilities configuration process enables employees to make workplace changes on their own or with very short notice. The Facilities team minimized the cost and increased the speed of workspace reconfiguration. Control of the process is now in the hands of the company; SCAN no longer has to rely on external resources for reconfiguring workspaces.

The Impact

Efficiency – Making the most of the space. A comprehensive telecommuting cost/benefit analysis, which included not only facilities costs but also technology, human resources, and productivity, initially showed a 30% return on investment. The actual ROI is now much higher at 40%.

The creation of the new space concept and the re-engineering of the planning process in combination have reduced workplace planning, configuration costs, and timeframe by approximately 38%

The real estate footprint is being reduced; four satellite offices were closed as staff was absorbed into the headquarters facility, saving $388,367 in annual rent in 2008 alone.

SCAN has begun a systematic, ongoing renovation of the corporate facility that has already created a number of new collaboration spaces that are being used virtually all day, every day.

Effectiveness – making the most out of the people. To participate in AWESOME, departments complete a readiness plan and create staff performance measurements. Staff productivity is measured before they begin working from home to establish a baseline, and is then monitored on a monthly basis through the Key

Performance Indicator (KPI) process that includes regular reports to the executive team. The data clearly shows that employees who work from home a minimum of two days per week are, on average, 18% more productive than they were when they were in the office on a full-time basis.

Expression – making the most of the mission. SCAN executives take great pride in the fact that employees believe in the SCAN corporate mission. AWESOME participants are asked to take an employee engagement survey prior to working from home, and then every six months afterwards. The data shows that on average employees are equally, if not more, engaged working from home as they are working in the office

Cost and Time Savings

In summary, a cost/benefit analysis of this new approach has projected savings of more than $7 million dollars over six years, or a 38% savings in the cost of workforce support. This conservative analysis shows that the flexibility of the townhouse setup reduces the number of steps in furniture reconfigurations. This reengineering of the process produces a significant savings in architectural services, dealer services, furniture, electrical, cabling, moving, and modular furniture storage costs. This analysis was approved by SCAN's Finance department; it is reviewed on a regular basis at executive team meetings.

Workplace Policy Evolution

The SCAN experience amply illustrates that the role of the facility manager (FM) is changing. We found that there were seven key areas in which the role of FM has evolved at SCAN. We outline those areas here, along with repeating the impact that each of these role changes has had on the company's bottom line.Communication skills. AWESOME broke down silos between the Facilities, Human Resources, and Information Technology departments; those functions are now aligned strategically. By empowering employees with the ability to "work anywhere," coupled with the design of contemporary collaboration spaces that are designed to foster creativity, innovation and break down silos, AWESOME has improved communication throughout the company.

Leadership and management. Every facility manager dreams about getting into the boardroom. Not only did the AWESOME program achieve that at SCAN, but it also became the business case for a new strategic initiative within SCAN's 2012 vision. And, in 2008, the AWESOME program's achievements directly impacted all executive bonuses!

Finance. The AWESOME program has reduced SCAN's operating costs by $1.1 million a year to date. We project that over the next five years the continuing workplace redesign and reconfiguration efforts will produce over $7 million in operating cost reductions. The project's contribution to reduced administrative costs allows SCAN to maintain its level of health care service to its 110,000-plus customers without increasing their costs.

Human and environmental factors. AWESOME participants value the reduction in commute time and the flexibility they gain so much that they now consider these working conditions a core component of their relationship with SCAN. In 2008, employee travel miles were reduced by 450,000. AWESOME has improved employee quality of life, attraction and retention, and employee engagement with the company.

Maintenance and operations. AWESOME introduced quantitative performance measurement practices into the company—measures that are now being rolled out and adopted for all employees in all departments. The AWESOME project data shows that employees who work from home a minimum of two days per week are, on average, 18% more productive than they were before AWESOME. The creation of a new space concept and the re-engineering of the planning process have reduced workplace planning, configuration costs, and cycle times by 38Planning and project management. AWESOME demonstrates how Facilities, Human Resources and Information Technology working together can make a positive impact on the bottom line while also improving employee engagement, attraction, and retention, and preserving the capability to respond to changing market conditions.

Quality assessment and innovation. The impact of AWESOME "has fundamentally changed the way that SCAN looks at its business model." The project has laid the foundation for SCAN's entry into new markets by putting in place key processes to promote corporate agility.

Real estate. Annual rent in 2008 was reduced by $388,367. The density of occupation in the corporate facility increased by 16%. Further reductions will be realized as SCAN systematically reduces real estate assets and even more employees participate in AWESOME.

Technology. To create the ability to "work anywhere," AWESOME prompted new technology initiatives such as wireless networks within corporate facilities, increased bandwidth availability, and a movement to laptops, cell phones, cordless phones, scanning, IP Soft Phone, web meetings, instant messaging, and interactive electronic whiteboards.

Playbook To Get You Started

The place to start is with planning! The more time and energy you spend developing your plan for "Mobility," the faster you will be able to implement. Quick results can be achieved by using prototypes and pilots, as we suggest below. However, as you do that you also need to have a robust planning model running in parallel. At SCAN it took almost nine months of planning before full-scale implementation was possible. But we are convinced the program roll-out would have taken much longer than it did without that kind of careful planning.

Two things must be done before you begin an actual flexible work program. First is securing the full, active support of the executive team. How you can effectively achieve that level of support is highly organizationally dependent. Some corporate cultures emphasize consensus building, while others are more autocratic. Our point is that you need highly visible, explicit, and public approval—to say nothing of pro-active championship—to pursue a strategy of integrated asset management; we call it "Collaborative Strategic Management."

Second, you need an interdisclipary leadership team, including program champions from several functional areas, to plan and oversee the initiative. Each of the members must be carefully selected. They need to be able to work together (if possible, as demonstrated by past behavior); they also need to be motivated toward forward-thinking and innovative ideas, and they should have a strong personal passion to radically improve the way work gets done in the organization.

We suggest that, at a minimum, you should have team members from:

- Corporate real estate
- Facilities management
- Information technology
- Telecommunications
- Human resources
- Risk management
- Legal
- Chief Financial Officer representative (not an accountant)
- Business development
- Internal communications specialist
- Functional representative from four largest work groups
- An outside facilitator for at least the initial meeting

Once you have received executive support and formed the team, you need a work agenda or project plan. The work agenda will drive the development (and selection) of pilot programs as well as the start of implementing key supporting business processes—like performance management. Be sure to take the team through the kinds of "deep-dive" examples listed here:

Deep-Dive Examples of Integrated Support Services

Deep-Dive #1: Changing Nature of Work

- examples of what people do, where they work, how they get their work done
- self-assessment (an organizational assessment of some kind)

Deep-Dive #2: Strategy of Place

- designing location structure to optimize around business drivers (labor, costs, markets, risks, intellectual capital, etc.)
- who currently drives strategies around these optimizations? (HR, IT, CRE, Business Units, Corporate Planning, Corporate Finance, etc.)
- need for coordination and balancing of drivers = need for integration
- the business case – the value of optimization and integration

Implications

- "Stranded Assets" : Legacy issues as the business drivers change (people, technology, capital assets)
- Implications for Infrastructure (structure, processes, governance)

Auditing

For SCAN's AWESOME initiative there are two processes in place that continuously audit program impact and provide proactive feedback to the executive team. There is both an external and an internal audit process.

Externally, impact data (i.e., productivity, cost, engagement levels, and attraction/retention are measured periodically and reported to an external consultant who analyzes the data and provides a written report directly to the executive team. Productivity is measured on a monthly basis; other statistics are reported quarterly.

As a double-check, there is also an internal audit process that is conducted by Customer Satisfaction, which also reviews all of the external processes. On an annual basis the internal audit team makes compensation bonus recommendations to the Executive Committee. The managers', directors', and officers' bonus pool is directly correlated to AWESOME program performance.

One of the major intents of this book is to offer quick, easily understandable action plans for facilities managers to move from ideas to action. In that spirit we have put together a simple table (Figure Four, below) to guide you in making decisions about what actions you want to take based on the ideas in this chapter. For example, if you want to realize a short-term (within 90 days) gain, you can focus on reducing your existing office footprint by deploying a "pilot" telework project.

We understand that most businesses are pressured these days to achieve dramatic improvements quickly. However, we encourage you to truly embrace the strategies and tactics in this chapter and start down the pathway to developing a fully integrated "strategy of place" program, using short-term gains to demonstrate what you can achieve and thereby justify more significant investments in long-term gains.

Figure Four: Impact Choices

	Impact	Tactics Employed
Short-Term (90 days)	1. Reduce office footprint 2. Save workforce support costs	• Implement telework pilot project • Implement "nomad" workers project
Medium-Term (1 year)	1. Increase productivity and engagement 2. Reduce "provisioning" costs	• Implement "performance Management process • Institute "neighborhood and townhouse" design program
Long-Term (1 year +)	1. Cost-effective "strategy of place" process 2. Labor supply-driven real estate management 3. Integrated CRE/ IT/HR asset management	• Develop a "strategy playbook" • Maximize use of "location-neutral" workers • Implement an "Agile Work Environment" model

An Alternate Workplace for Global Supply Management at Steelcase

This innovative space for the Global Supply Chain Management department at Steelcase was designed to address the new ways work gets done: giving workers a choice about where and how they work; a measure of control over the space; and a place to improve connections and collaborations among people. Designer Julie Barnhart-Hoffman calls the workspace a "behavioral prototype."

Barnhart-Hoffman and the group transformed 7,000 square feet of traditional paneled workstations into a community of shared work settings that echoes the SCAN experience in many ways. Space that formerly housed 36 assigned cubes now easily supports 70 people in a range of workspaces. Barnhart-Hoffman commented, "From a design view, it isn't about reducing the number of cubes; it's about making space more effective."

A café takes center stage in the space. There are booths, small tables with mobile chairs, a refreshment bar, a flat panel running cable news (also used to display presentations during meetings), and stand-up-height workspaces that define the space. Plenty of natural light, a bright surface materials palette and Wi-Fi add to the cafe's appeal.

"Visitors are surprised that people actually work in the café, but some workers, especially younger ones, work here all day," says Cindy Bessey, the concierge for the department. "We see a lot of backpacks."

On a first-come first-served basis, workers choose their workspace for the day. "You can't stuff everyone into the same work mode," says Bessey. This alternative space supports multiple work styles with private and semi-private spaces, a team room, a telepresence room (two-way videoconferencing), partially enclosed team spaces, and lounge areas.

The space is such a draw that workers from other departments prefer to meet there, increasing cross-functional communications.

New hires are more productive from the start, says Barnhart-Hoffman. "When they had cubes, they had to move, reconfigure—all the things you have to do when people are hired, change jobs, or move. Now, when someone new to the group comes in, they say 'Here's your Blackberry® and laptop, go to work,' and they kind of melt into the space."

The WorkSpace Futures (WSF) group at Steelcase has built out spaces within its own facilities to study what they refer to as emerging work strategies. One of the key insights uncovered by the WSF group is the notion that it's not enough to introduce a new work strategy without a corresponding change in the physical space.

Simply enacting a mobile work strategy, for example, without a corresponding change in the physical space, may save real estate cost, but with a potential reduction in productivity if the work environment does not appropriately support the mobile worker.

Reinforcing our experiences at SCAN, Steelcase researchers report several key insights that are critical to developing an effective emerging work strategy that supports distributed work:

- Customizing their day. Workers need to have control and choice, to amp up or down their social setting—to be able to transition quickly between modes of work and to signal their availability to others. Space can reflect the company's culture of acceptance of these kinds of behaviors.
- Building a "hometown." It's critically important for employees to have a sense of belonging and community, develop broad social and professional networks, build connections and trust, and have a sense of control over their work life. Eliminating individual home bases (those individually assigned spaces) shifted the focus of personal ownership to group ownership. (Recall that at SCAN enabling individuals and teams to design their own workspace developed a strong sense of ownership.)
- New spaces, same basics. Even though they're working in new ways, employees still need support for their personal tools: horizontal surfaces, power connections, and a network connection, as well as support for their physical well-being. People flock to plugs, screens, and surfaces for support for their personal tools. Spaces without those tools were underutilized because they limited workers' mobility.
- Evolving behavior. People need to have time to transition to being mobile workers, to learn to use the new space to the maximum, to have clarity around new expectations, and to feel that they have ownership within the transformation. Transitioning an organization to mobile work is a multi-layered process. A clear

strategic vision from leadership, facilitating use by assigning a concierge to the space, and giving workers an opportunity to share in developing the way to use the space—all are critical to success.

By using flexible space and furniture, Steelcase's new workspaces support different generations, individual and team work, focused private work, and group work—all in the same amount of real estate. By not restricting people to a single assigned workstation, the company has offered them more options, more tools, and more empowerment to work productively.

Expanding to the triple bottom line

Alternative work programs have been implemented at many other organizations, such as IBM, Microsoft, and Bank of America; and other emerging work strategies are blooming at companies worldwide. A year ago these strategies were generally viewed as a tool to help attract and retain talent. Now they're considered a means to link a mobile workforce, a way to shrink an office footprint, and a means to support different generations of workers with different work styles and needs.

But emerging work strategies can and should be judged on an even larger scale: the triple bottom line that considers not only economic and social perspectives, but also environmental gains. The Steelcase Workspace Futures team held themselves accountable to measuring success based on the triple-bottom line.

The triple bottom line metrics used for the Steelcase Global Supply Chain behavioral prototype included:

Economic

- Uses one-half the square footage previously required
- Helps reduce operating expenses associated with the real estate portfolio
- Helps the department attract and retain talent
- Enables the department to maintain flexibility and stay productive
- Positions the company to respond quickly to changes in staffing needs

Social

- Encourages social interactions in the café and other informal spaces
- Treats employees with respect and builds trust
- Causes workers based in other parts of the world to feel more a part of the department (videoconferencing capability

Environmental

- Saves on printing, paper and other resources by emphasizing and supporting digital storage
- Provides natural light to every workspace
- Reduces carbon emissions and energy use by promoting videoconferencing
- Extends the useful life of materials by provisioning furniture, technology, and work tools that are easily reconfigured

Conclusion

As we suggested at the outset of this Chapter, it's time to rethink the office—what it's for, how to use it, and why people go there at all. At both SCAN Health and Steelcase the workplace designers paid close attention to how people were actually using the space, what their self-perceived needs were, and what kinds of office furniture and equipment, technology tools, and management policies were essential for generating both organizational productivity and employee engagement. In both organizations the transformation was driven by workplace services but produced dramatic improvements in a broad range of financial, social, and environmental outcomes.

Resources

Published Books and Articles

360 Magazine Digital Edition: "Attracting & Engaging Today's Workers: Shifts in Attitudes & Behaviors Makes the Workplace More Important Than Ever," Steelcase Inc. http://steelcase.idigitaledition.com/issues/2/

360 Deep Dive: "How the Workplace Can Attract, Engage & Retain Knowledge Workers," Steelcase Inc. http://www.steelcase.com/na/360_ezine_Research.aspx?f=17608

360 Deep Dive: "Collaborative Workspaces," Steelcase Inc. http://www.steelcase.com/na/360_deepdive_collaborative_w_Research.aspx?f=20196

360 Magazine Digital Edition: "Offices on the Cutting Edge: Don't Just Shrink – Rethink," Steelcase Inc. http://steelcase.idigitaledition.com/issues/1/

360 Deep Dive: "How Emerging Work Strategies are Changing the Workplace: Telecommuting was just the beginning" http://www.steelcase.com/na/360_deepdive_emerging_work_s_Research.aspx?f=38814

Managing the Telecommuting Employee, by Michael Amigoni and Sandra Gurvis, Adams Media, 2009 (in press: available November 2009)

Undress for Success: The Naked Truth About Making Money at Home, by Kate Lister and Tom Harnish, John Wiley & Sons, New York, 2009.

Working Together: Closing the Talent Gap. CoreNet Global's The Leader, September-October 2007, pp 12-16 (featured cover article)

Corporate Agility: A Revolutionary New Model for Competing in a Flat World , by Charles Grantham, James Ware, and Cory Williamson, American Management Association, New York, 2007.

The Next Generation Economy: A New Equation for Success? (James Ware) Capital Magazine, November, 2006.

Location Strategies, Corporate Real Estate Leader (CoreNet Global), July, 2006.

The Times They Are A-Changin': The Future of Work Is Already Here, (James Ware) Capital Magazine, December 2005.

The 2-Second Commute, by Christine Durst and Michael Haaren, Career Press, Franklin Lakes, NJ, 2005.

Which skills and competencies will be most critical for leaders as the workplace continues to evolve? Leadership in Action (Center for Creative Leadership), vol 4, #6, January/February 2005.

The Changing Nature of Work and the Workplace (with Eric Scaff), CoRE 2010 Report, CoreNet Global, July, 2004 (available from CoreNetGlobal.net).

Demographics and the Changing Nature of Work, Corporate Real Estate Leader, May 2004, pp 36-42.

Where, Oh Where, Should I Go?, Business Xpansion Journal, November 2003.

Changing Patterns of Workforce Management, Journal of Facilities Management, Vol. 2(2) September 2003, pp 142-160.

White Papers and Research Reports

Building a Strategic Playbook, Work Design Collaborative White Paper, November 2008.

What Attracts Knowledge Workers?, WIRED West Michigan, March 2007.

Knowledge Work and Knowledge Workers, WIRED West Michigan, March 2007.

Market Segmentation and Development for Remote Work Centers. WIRED West Michigan, February 2007.

How Come Distributed Work is Still the Next Big Thing? Work Design Collaborative White Paper, December, 2006.

Scenario Planning Primer, Work Design Collaborative White Paper, January 2006.

Third Places and Workplace Innovation, Work Design Collaborative, September 2004.

Rethinking Workplace Design, Work Design Collaborative, July 2004.

Understanding Distributed Work, Future of Work, July 2002.

Important Websites and Service Providers

E-work
http://www.e-work.com

Teletrips
http://www.teletrips.com/

Flexpaths
http://www.flexpaths.com/

Future Work Forum
http://www.futureworkforum.com/

Home 2 Office
http://home2office.com/

Next Generation Consulting
http://nextgenerationconsulting.com/

One Page Business Plan Company
http://www.onepagebusinessplan.com/

PEP Productivity Solutions, Inc.
http://www.pepproductivitysolutions.com/index.cfm/pageid/1/ViewPage/Home

Pockets: Distributed Work Alternatives, Inc.
http://www.pocketsnet.com/search.php

Steelcase Inc.
http://www.steelcase.com/

Sucessfactors
http://www.successfactors.com/

Undress 4 Success
http://www.undress4success.com

Venezia Enterprises
http://www.veneziaenterprises.com/

Work Design Collaborative, LLC
http://www.thefutureofwork.net

World at Work
http://www.worldatwork.org

Useful Blogs

AppGap Blog
http://www.theappgap.com

Digital Nomads
http://www.digitalnomads.com/blog

The Future of Work
http://www.thefutureofwork.net/blog

Net Age Endless Knots
http://endlessknots.netage.com/

Remote Revolution: Working. Differently
http://www.remoterevolution.com/

Workshifting.com
http://www.workshifting.com

Other Online Resources

Getting Real: Transforming the Workplace at SCAN Health.

http://thefutureofwork.net/blog/2009/04/19/getting-real-transforming-the-workplace-at-scan-health/

A blog posting at The Future of Work about SCAN Health's AWESOME program that includes an embedded slide presentation about the program that was delivered at the IFMA Industries Forum in Vancouver, BC, in March 2009.

There you have it: our answer to a question that everyone should be asking these days, "What's an office for, anyway?" To re-cap, we have gone from learning a new language, understanding real estate strategy, travelling to work, our buildings' external environments, and now this, a really new way of thinking about the office itself.

The next three chapters are the rest of our "deep dive" into the routine but critically important "minutiae" of the everyday. It's a territory you know well—or think you do. But we offer some innovative new looks at energy, lighting, and building maintenance. Yes, this is where the sleeves get rolled up and the fingernails get dirty—but it's got to be done, so let's do it right!

ABOUT THE AUTHORS

James Ware Ph. D.
Cofounder, Work Design Collaborative

James Ware is Executive Producer and a cofounder of the Work Design Collaborative and the Future of Work program. He has over 30 years experience in research, executive education, consulting, and management, including five years on the faculty of the Harvard Business School.

His most recent book, *Corporate Agility*, co-authored with Charles Grantham and Cory Williamson, addresses the need for organizations to coordinate and integrate HR, IT, and CRE/facilities to develop new business capabilities for competing in a flat, global economy.

Jim holds Ph.D., M.A., and B.Sc. degrees from Cornell University and an MBA (With Distinction) from the Harvard Business School. He served on the board of trustees of Heald College from 1998 to 2007, the last two years as Chairman. He lives and works in Berkeley, California.

Charles Grantham Ph.D.
Cofounder, Work Design Collaborative

Dr. Grantham is a co- Founder of the Work Design Collaborative, a small “think and do” tank located Prescott Arizona. He has been active in this area for over 25 years and is recognized as an international expert on the design of information and organizational systems, which support these new forms of work.

Dr. Grantham received his Ph.D. in Sociology from the University of Maryland in 1980. He also has an honors degree in psychology and another in urban studies. He has published six books and over two dozen technical papers. His latest book *Corporate Agility* published by the American Management Association looks at how to integrate the management of technology, human resources and corporate real estate assets.

His current research interests are measuring the “triple bottom line” and the relationship between intellectual capital and company performance. He is also very active in regional government initiatives to promote broadband Internet usage for public safety, job creation and mitigation of environmental impacts.

www.thefutureofwork.net

6 Chapter Six
Energy Savings

This is another of the "core" chapters in which we take a "deep dive" into the inner working of facilities management. This is not to say the first five chapters of this book are not important, but rather to note that we are now moving into what is probably more familiar territory for many of you.

First we are going to take a close look at the biggest potential operational saving: energy usage. We all know how important energy conservation is, and we hear about it everyday. So let's follow Edie Fee through an analysis and some insights that will help you make your facility truly Green.

Edie Fee, MCR
Partner, INPOINT Advisors

The Idea in Brief

- Green business practices are the success strategy for building owners, landlords, and tenants. The key cost-saving strategy is to reduce energy usage; commercial buildings consume 72 % of electrical usage in the United States.
- Opportunities to reduce energy usage exist at every budget level.
- The key to developing an effective strategy for reducing energy usage is developing a good ongoing measurement system.
- Energy usage reductions come from improved maintenance of existing equipment, replacement of inefficient equipment, and changes in operating practices.

The Idea at Work

- Responsible building owners will be expected by their stakeholders (investors, financers, community agencies, tenants) to take advantage of the opportunities available to them to reduce energy consumption.
- Standards agencies have emerged to define standards that buildings and their interiors should abide by to reflect good green business practices—e.g., LEED standards as defined by the U.S. Green Building Council (USGBC)
- Case studies have shown short paybacks on investments in green business practices with continuing ongoing positive financial and environmental benefits.
- Market forces will demand that building managers implement green business practices.

Executive Summary

All building owners and managers will need to implement green building practices in order to compete in the marketplace of the 21st century. These practices prove to be beneficial economically, socially, and environmentally. This chapter will define practical recommendations for implementing such practices as they relate to energy savings; it includes specific case examples of those who have successfully done so and shows how they did it.

What's Your Role?

Everywhere you look in your building you see equipment and activities related to energy usage. How you approach the problem/opportunity varies with your role.

If you are a tenant in a multi-tenant space, chances are you pay for your energy usage as a result of billing from your landlord. If your space does not have a separate meter, you pay your proportionate share of the whole building's energy costs.

So you may say to yourself, "Why should we make a major effort to reduce our energy usage? We will only get a small part of the benefit; the other tenants will share the benefit." That is a perfectly valid concern. The key here is metering. Only when you have your own meter can you monitor your usage and justify doing something directly about it. Your lease will govern whether you can have your own meter and if you can be billed based on your own usage. It will be important for you to negotiate this arrangement up front, or try to re-negotiate it if you are already in a lease that doesn't include that kind of self-control.

If you cannot renegotiate the lease, then you have a couple of options:

- Talk to your landlord and express your willingness to work with him to make energy saving changes. Encourage the landlord to make similar agreements with the other tenants. For the most part, the landlord does not make money on the electricity usage and all of the tenants will benefit from an improvement, so you should all be motivated to cooperate where possible.

  What are some examples of what the tenants could do collectively?
  - Restrict usage of areas of the parking lot after hours so that the landlord can limit lighting in those areas.
  - Agree to modify the standard building temperature level in the summer and have tenants wear "summer appropriate" clothing.
  - Replace CRTs with lower-energy monitors.
  - Increase utilization of task lighting.

If you are a landlord, you are bound by your leases. However, it will be to everyone's benefit if you offer to install meters. Tenants who use lots of energy will probably resist re-negotiating the way you do billing because they are getting the benefit of sharing. Those who use little energy will welcome it.

You most likely cannot make changes related to the tenant space until you renegotiate the leases. What can you do in the meantime? There are several practices under your control that you can implement to reduce usage.

For example:

- Change bulbs in the standard building lighting to T8's;
- Implement daylight cleaning to reduce the amount of after-hours HVAC and lighting (see Chapter 8);
- Change all light switches in common areas to sensored switches; and
- Reduce outdoor and signage lighting.

Your easiest opportunity comes when you are the owner/occupier of a building. You have control over how and when energy is used as well as the cost structure. You can implement all of the ideas listed above plus consider numerous changes in operating procedures. For example:

- Eliminate the use of superfluous equipment (e.g., individual space heaters, individual printers); and
- Eliminate the use of stand-by modes in large equipment (e.g., copiers).

From here forward, we will assume your company owns the building. You can adapt the ideas to your particular circumstances recognizing that all tenants will benefit by reductions in energy usage. The issue will be how to fairly charge back the costs.

Where Do You Begin?

The U.S. Department of Energy (DOE) under the Environmental Protection Agency has developed the "Energy Star" program that provides a good roadmap for you to follow to determine how to develop your energy reduction strategy. Become familiar with their site at www.energystar.gov .

But, you may ask, what about all of this emphasis on LEED? LEED stands for the "Leadership in Energy and Environmental Design" Green Building Rating System™, developed by the U.S. Green Building Council (USGBC). It is a rating system/standard for measuring how energy-efficient and environmentally friendly your building is. The LEED standard uses a point system to evaluate the

building. Based on achieving certain levels of points, your building can be certified as a LEED building. The higher the rating, the higher the certification that can be achieved (Bronze, Silver, Gold. and Platinum).

The standard is a good roadmap, but it should be considered only after you work through all of the Energy Star activities. (note: A requirement of LEED is that you have an Energy Star rating). It is not a short-term solution to reducing energy costs! More details on LEED and the certification criteria can be found at http://www.usgbc.org .

The diagram in Figure One illustrates the process that the Energy Star program recommends. The web site provides considerable detail for each of these steps so we will not detail them here. Instead we will give you several things to consider as you go through each step.

Figure One: The Energy Star Process

Make Commitment

The fact that your organization has developed a Sustainability Plan (as described in Chapter One) reflects management's commitment to reducing your energy costs. What you as the facility manager now need to do is understand all of the ways in which you can reduce energy costs. To give you an idea of where to focus, consider the diagram in Figure Two.

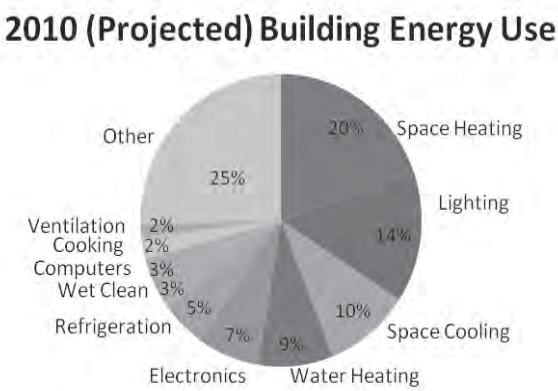


Figure Two: Projected Building Energy Use in 2010

This chart indicates that typically 30% of energy usage is related to the combination of space heating (20%) and cooling (10%). Clearly this activity must become your initial focus.

There are several things to do to prepare yourself:

1. Make an inventory of all equipment you have that is related to heating and cooling. Include details on each unit (such as manufacturer, model/make, serial number, size/capacity, date of purchase, expected life, PM cycle, date of last PM, servicing vendor). Also identify the type of filter, frequency of replacement and when the filter was last replaced. If you have a CMMS system, you should already have this information. In addition, you should also review any service records so that you can see the frequency of repairs and how they relate to the useful life of the unit.

2. Assemble all the user manuals (usually easier said than done). If the equipment was installed prior to your watch, it's usually a mystery where these documents are. Many are now available online, so check the manufacturer's site.

3. Meet with your service providers and talk about the servicing plan. You need to understand the criteria you are using to evaluate maintenance on the equipment. There are sensors available for most filters so that you only have to replace the filters when needed (e.g., pressure-differential sensors or optical sensors). This practice alone can introduce major cost savings.

4. Ask your service providers to give you an assessment of the state of each piece of equipment. HVAC equipment that is not in good repair will waste considerable energy. At a minimum, you want to get each unit in good working condition. If parts must be replaced, look at the expected life of the unit and the repair history to determine if it would be more cost-effective to replace the unit rather than repair it. The replacement unit will also most likely be much more energy-efficient so that should be a consideration, as well.

Lighting uses 14% of all energy. Refer to Chapter Seven for a detailed discussion of what you can do to reduce lighting costs.

Water Heating is the next most-used area, consuming 9% of energy usage. You should evaluate all of the ways in which your organization uses warm water. For such uses as common areas (e.g., kitchens, rest rooms), you have several options:

- For the short term, reduce the temperature level of the water
- Consider replacing water heaters with tankless water heaters that produce warm water on demand. Individual point-of-use tankless heaters can be considerably more efficient. The only place where these units are "marginal" in an office environment is where you need a steady flow of water at a steady temperature. For example, they are often not satisfactory when used for showers.

Electronics and computers use 10% of all energy usage.

- Look at the typical workstation. It will have a computer, a monitor, perhaps a printer, and most likely the units are all set in stand-by mode when not in use. Stand–by consumes energy. A simple business practice of asking (or requiring) employees turn off their equipment at night will make a significant change in total energy usage. If you plug all the individual units at a workstation into a single power strip, it is very easy for a person to turn them all off with just a flip of one switch.
- Eliminate use of the power-saver mode on large copiers/ fax machines. The so-called but misleading "Power-Saver" feature is another big consumer of energy. Turn it off when not in use, especially with equipment that is not used frequently. In addition, make every effort to eliminate the use of individual printers by consolidating printing to common or shared devices.
- Flat screen televisions and monitors use considerably less energy that CRTs. Replace CRTs as soon as practical. And make sure to turn them off when they are not in use.
- Look equally carefully at any other specialty electronic equipment. At a minimum, make sure all devices are turned off when not in use.

~ The key ~

make it more efficient
use it less often
turn it off when not in use

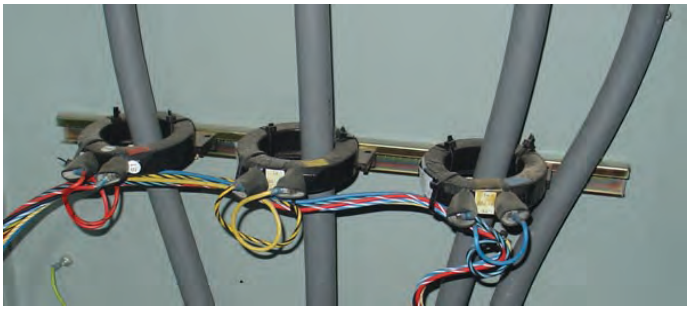
Assess Performance

The first formal step of an energy audit process is to do an assessment. Most people use an outside firm that is trained to do it. Just be sure you use a firm that is qualified. Be careful to not assume that a person who is LEED-certified (LEED-AP) is truly qualified. You should find out how many assessments they have performed in buildings similar to yours and get some details of the level of detail of their analysis. Ask for a sample assessment report. The assessment should be done by an individual certified as a Professional Engineer (PE) and also include other specialist engineers in the evaluation such as a mechanical engineer (ME) who knows the details of HVAC equipment.

In preparation for the assessment, you will need to have historical data for the provider to review. At a minimum, you should have twelve months of utility bills so you can provide an adequate picture of seasonal variations.

The key to completing a comprehensive assessment is to have multiple meters for tracking energy usage in different parts of the facility. The PE or ME can give you recommendations on where to place them so that you can isolate areas of unusual energy usage. Without multiple meters, it will be very difficult for you to evaluate the effect of the individual changes you are making.

The meters you will most likely use are actually submeters (meters are for the whole building). The submeters are called current transformers or "CT's." They are monitoring devices that look like a donut and lock onto individual electrical circuits at an electrical panel. The CT senses and gathers data on voltage, wattage, and amperage on the circuit in real-time. Multiple CT's can be connected to a processor or server/controller. The data will be presented in kilowatt hours (kWh) consumed.[1]



The Energy Star website has a free tool that you can use to track your energy usage. It is called Energy Portfolio Manager

http://www.energystar.gov/index.cfm?c=evaluate_performance.bus_portfoliomanager

Go to the site and follow the directions. It provides a worksheet for you to enter your usage data and produces reports that will assist you in tracking your data. The consultant you hire to do your assessment may have a tool of his own, but even so you should plan to use the Portfolio Manager on an on-going basis to monitor your energy usage. If you move forward with getting an Energy Star rating, you will need this data for the evaluation.

Who Can Do the Assessment for Me?

As mentioned above, if at all possible, find an experienced outside firm to conduct the assessment for you. The author has had considerable experience with the firm CTG Energetics located in Irvine, CA.[2] CTG engages a full spectrum of operating, maintenance, and management staff to develop and implement comprehensive sustainable facility programs.

These programs facilitate the effective management of the facility operations and environmental footprint. At the end of this chapter, you will also find several case studies based on actual savings that CTG has achieved as a result of conducting the assessments, making recommendations, and working on implementation plans with some of its clients.

Set Goals

The data you gather as part of the assessment will form your baseline, the starting point from which you will measure your energy savings. You will then want to set some goals reflecting how much you think you can reduce your energy usage. But how do you determine what your goal should be?

- Your consultant can give you some advice.
- You can also get benchmarking data from appropriate professional and/or government organizations to determine what other buildings like yours are using on average.
    - IFMA: Go to http://www.ifma.org and select the bookstore. The report you want is available under: Operations & Maintenance Benchmarks RR#32.
    - BOMA: Go to http://www.bomaeer.com for details on the Experience Energy Report including how to subscribe to the service.
    - Look at the U.S. Department of Energy Building Energy Data Book at http://buildingsdatabook.eren.doc.gov/
- Look at the Quick Reference Guide that is part of the Energy Star site at www.energystar.gov/benchmark
- Actual energy consumption statistics from the U.S. Department of Energy, Energy Information Administration at http://www.eia.doe.gov/emeu/consumption/index.html

The key to setting your goals is being able to measure usage. Below are some additional suggestions to help you obtain some key measurements:

- To evaluate the effect of changing the temperature on your air conditioning, monitor and track your energy usage for every hour of the day for a couple of weeks. Then schedule a "test" when you increase your temperature by 2 degrees for a couple of hours. Monitor the energy usage for those two hours. The reduction in energy usage can give you an idea of the energy you can expect to save for each hour that you keep the building temperature increased during hot weather or decreased during cold weather. Remember that you will see seasonal differences, so monitoring this effect regularly for a year will be important in order for you to know how to make seasonal adjustments.
- Look at the time of day when you bring your HVAC online in the morning. How long does it take to get to the desired temperature? How does this time period vary as a function of the morning outdoor temperature? Could you delay when you start the HVAC? Every minute is a reduction in energy usage. Do the same for when you turn the HVAC down at the end of the normal working day.

If you are able to commit the resources, you will want to put your building thorough a "commissioning." This process is one in which all of the equipment is tested to determine whether it is performing to specifications. Performing to specifications should be your long-term goal because you cannot achieve maximum results if your equipment is not operating at its top potential. You may have to do needed maintenance and equipment upgrades in increments if cost is an issue. Select the equipment that is most likely to have the greatest impact first (e.g., your largest/oldest HVAC units).

Create Action Plan

After you have completed an assessment of your equipment and monitored your energy usage, you should have some specific ideas about where you can make improvements. These will be the ideas that you will want to bring to the planning meetings for the team developing the Sustainability Plan described in Chapter One. If you used a consultant to assist with your energy usage assessment, he or she should be able to help you quantify the expected benefits and the related costs of implementing the recommendations.

Present your ideas for review and continue to refine the details so that the ideas can be considered for implementation. Because an assessment typically requires some time to gather sufficient data, you may have to submit some of your recommendations at a later time as updates to the plan. So plan to propose first the actions you can take that have the shortest lead times (e.g., add power strips to use with the electronic equipment at each workstation), and keep monitoring other ideas so you will have good data for developing a business case for them at a later time.

Implement Action Plan

Your implementation will most likely be in conjunction with the approved projects that are included in the Sustainability Plan. The most important thing is for you to keep monitoring energy usage so you can validate the effect of the changes you have implemented. Don't forget to make adjustments based on seasonal weather changes.

You also want to keep entering your data into the Energy Star Portfolio Manager or any other tool you decide to use. There are also a number of other software tools that are available to assist you in this monitoring effort:

- BOMA's ERR (referenced above)
- Tririga's TREES - enterprise sustainability software providing automated environmental analysis and carbon management features. Use TREES to identify underperforming facilities and processes, analyze the financial and environmental benefits of sustainability investments, and automate energy reduction actions. http://www.tririga.com/products/products-trees-a
- CSM is a web-based software application for corporate sustainability management and reporting. This application allows organizations to manage the three aspects of corporate sustainability (Economic, Environmental and Social) in every efficient manner. CSM supports the Global Reporting Initiative (GRI) Guidelines; its content and functionality is fully configurable to fit the specific needs of the reporting organization.
- Hyperion`s leading reporting and analysis tools can also be used for providing users with dashboard views into sustainability performance and the ability to link the sustainability data with financial data and decision-making processes. http://www.environmental-expert.com

Where Does LEED Fit In?

Almost every article we pick up these days seems to focus on getting LEED Certification. So your question may be, "Do we really need to do that?"
As mentioned above, LEED is a rating system that has been developed to establish standards for buildings that are environmentally friendly. The rating system has become very popular in the United States, and individuals can now be certified to lead both assessments and implementation projects in order to obtain LEED certification for their buildings.

- LEED – AP – for individuals certified as accredited professionals
- LEED – EB – for existing buildings (98% of all buildings)
- LEED – NC – for new construction (1 – 2 % of buildings)
- LEED – CS – for Core/Shell
- LEED – CI – for commercial interiors

The value of following the certification process is that it provides you with a good plan for increasing the energy efficiency of a building. However, unless you have a good business reason to pursue an official certification for your building (such as being the owner of a premier complex and wanting to use the certification as a marketing or selling tool), it may not be worth the cost to go through a formal LEED certification.

There are other standards that people use:

- The Global Reporting Initiative (GRI)[3] the Global Reporting Initiative (GRI) was started in 1997 as a multi-stakeholder process and independent institution whose mission has been "to develop and disseminate globally applicable Sustainability Reporting Guidelines." The GRI uses ecological footprint analysis; it became independent in 2002. It is an official collaborating centre of the United Nations Environment Programme[4] United Nations Environment Programme (UNEP). During the tenure of Kofi Annan, UNEP cooperated with the UN Secretary-General's Global Compact.[5]

- Green Globe is based upon the Agenda 21 Plan that was originally endorsed by 182 heads of state at the Rio Earth Summit of 1992. It provided a set of principles for local, state, national, and international action on sustainable development.[6]

What Other Opportunities are There for Energy Savings?

Another important opportunity to reduce operating costs is through rebates and incentive programs. These programs are numerous and often change daily. The best information about programs available for your location is DSIRE ("Database of State Incentives for Renewable Energy"). http://www.dsireusa.org

This is a comprehensive source of information on state, local, utility, and federal incentives and policies that promote renewable energy and energy efficiency. Established in 1995, DSIRE is an ongoing project of the North Carolina Solar Center and the Interstate Renewable Energy Council; it is funded by the U.S. Department of Energy.

What About Solar?

Solar energy technology could be a whole chapter in and of itself. There are clearly benefits to use solar energy:

- Solar energy is renewable. We never have to worry about running out of sunlight or using it all up. The sun is a consistent power source meaning it's always going to be there every day.
- Solar energy is environmentally friendly. Compared to fossil fuels which release greenhouses gases, carcinogens and carbon dioxide, solar cells don't release anything into the air.
- Solar panels are extremely reliable. There are no moving parts so you don't have to worry about replacing anything. In fact, most people generate electricity for 1000s of hours with little or no maintenance.
- Solar cells make no noise while collecting energy. There are no other renewable energy sources that are completely silent.
- In the long run, solar electricity is cheaper than buying it from the power company. There is a start up cost, but then it starts paying for itself. Once you break even, everything after that is profit. Compare this to paying a monthly bill and getting no return on investment.
- There is a huge variety of solar panel systems available. Some can cost tens of thousands of dollars, and some cost just a couple hundred. This means anyone can get into solar, there's an entry point for just about everybody.
- You're not required to connect to the power grid. You can be completely self-sufficient and live off-the-grid. Imagine never paying another monthly bill or hook-up charge.
- Sell excess electricity. If you build a large enough solar panel system, you can make your electric meter spin backwards! Most power companies will gladly buy or credit you for this excess electricity. Contact your local power companies for more details.
- Government tax credits. Most governments will provide some kind of tax credit or incentive for people purchasing solar energy systems. On average, rebates usually cover 20-30% of the system cost.
- Solar technology is constantly improving. Solar installations are increasing every year[7].

As the technology evolves, this will most likely become an essential component of your energy management program.

So—what is the down side?

Currently there are two primary factors that are causing many building owners to defer the consideration of using solar panels as an alternative energy source:

1. The cost of the solar equipment; it is still a major capital expenditure

2. The rapidly changing technology. There is so much new development in this area that a system installed today could be technically obsolete in a couple of years. The "Third Wave" of solar systems is already being manufactured by firms like Nanosolar in San Jose, California.[8]

The "First Wave" of solar technology started with the introduction of silicon-wafer based solar cells over three decades ago. While ground-breaking, it is evident today that this technology came out of a market environment with little concern for cost, capital efficiency, and the product cost/performance ratio. Despite continued incremental improvements, silicon-wafer cells have a built-in disadvantage of fundamentally high materials cost and poor capital efficiency. Because silicon does not absorb light very strongly, silicon wafer cells have to be very thick. And because wafers are fragile, their intricate handling complicates processing all the way up to the panel product.

The Second Wave came about a decade ago with the arrival of the first commercial "thin-film" solar cells. This development established that new solar cells based on a stack of layers 100 times thinner than silicon wafers can make a solar cell that is just as good. However, the first thin-film approaches were handicapped by two issues:

- The cell's semiconductor was deposited using slow and expensive high-vacuum based processes because it was not known how to employ much simpler and higher-yield printing processes (and how to develop the required semiconductor ink).
- The thin films were deposited directly onto glass as a substrate, eliminating the opportunity of using a conductive substrate directly as an electrode and achieving a low-cost, high-performance electrode.

The Third Wave of solar power consists of companies addressing these shortcomings and opportunities. Most of the new companies address one or the other of the two issues cited above. One company—Nanosolar—brings together the entire conjunction of all seven areas of innovation, each break-through in its own right, to deliver a dramatic improvement in the cost-efficiency, yield, and throughput of the production of much thinner solar cells.[9]

Solar technology and efficiency is evolving rapidly and the cost per megawatt is decreasing proportionately. We believe we are still too early in the technology cycle for us to recommend a solution at this point in time. We do believe, however, that within the next few years there will be solar products available that will be both cost-effective and relatively easy to install.

What Kind of Savings Can You Expect?

Putting all of this into perspective, the reason you are focusing on energy usage and costs-like so many other topics in this book—is to contribute to the Triple Bottom Line for your company:

- People – sustain the relationships within your organization, with your community, with your providers and with your customers.
- Planet – sustain the global environment
- Profit – sustain your organization's business viability

The assessments and monitoring activity we are recommending can be very time-consuming. Thus, you want to make sure that the effort is well-spent and that it produces a meaningful payback.

Following are several case studies provided by CTG Energetics of some actual sustainability projects. We have included them to provide you with a clear understanding of the potential cost-savings and environmental impact that your effort can produce.

CTG Case Studies – Energy Efficiency

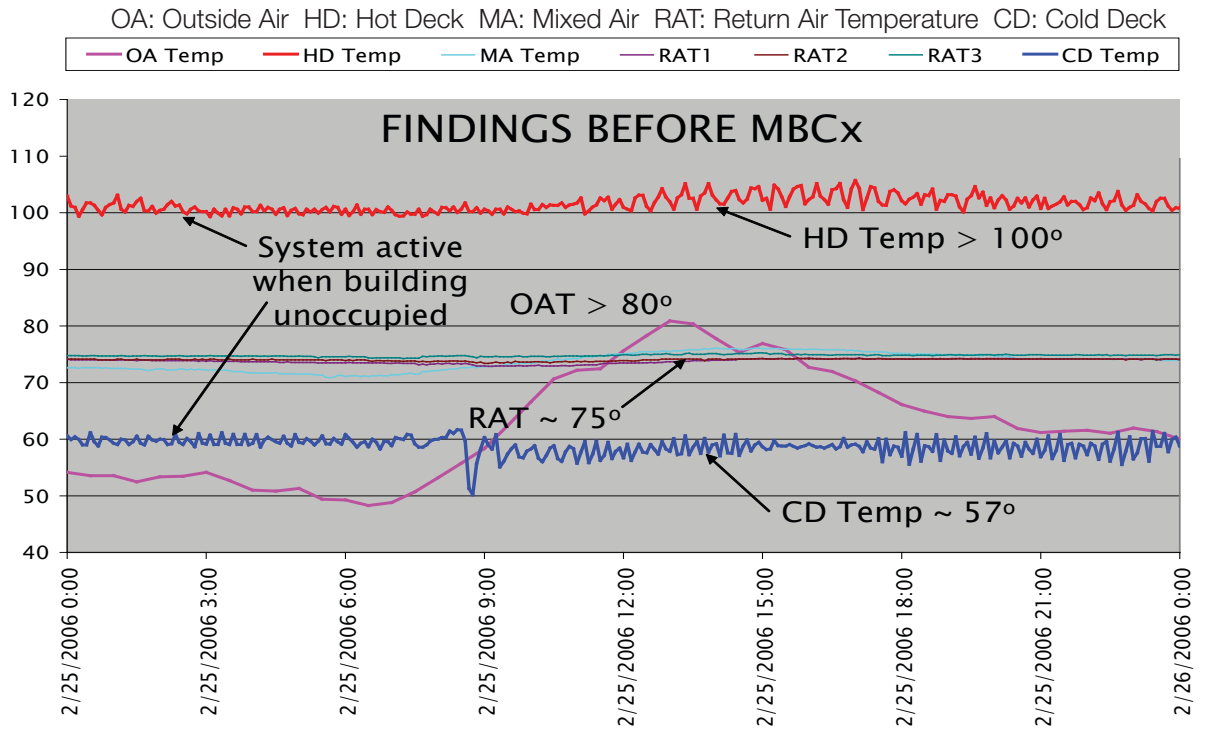
Scheduling	
Problem	**Optimization of run times and equipment schedule**
Facility Location	Northern California
Building Type	Commercial Office
Ownership (portfolio, etc)	Part of a large portfolio
Construction Date	1980's
Resource Savings	56,948 kWh & 19,160 therms
Cost Savings	$4,556 for KWh per year $23,950 for therms per year
Additional Info	Annual projected savings is an estimated value based on blended rate of $.08 kWh for electricity and $1.25 therm for natural gas

Strategy/Solution:
Using a building operating plan format, the building engineer conducted a thorough analysis of the current equipment schedule and run times and compared that to the actual hours of occupancy. The building engineer discovered several opportunities for optimization. The systematic process used to complete the building operating plan in this case resulted in the adjustment of HVAC runtimes and subsequent cost savings.

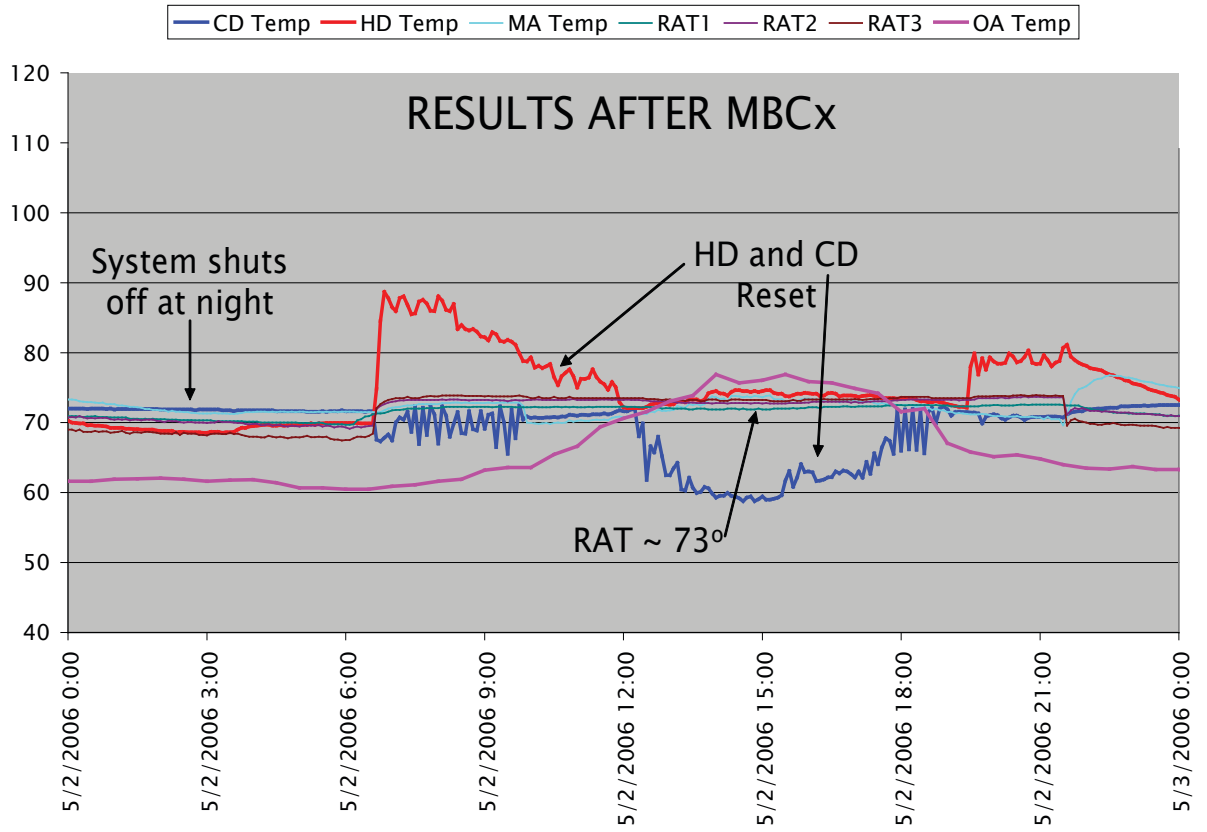
Controls	
Problem	**Lack of control and subsequent excessive energy use and cost**
Facility Location	Southern California
Building Type	Classroom, Administration, Library, and Lab Buildings
Ownership (portfolio, etc)	Higher Education Campus
Construction Date	Circa 1950s and 1960s, with major HVAC renovations in the later 1990s
Resource Savings	115,000 therms of natural gas and 790,000kWh of electricity per year
Cost Savings	Over $160,000 per year (more than $0.30/SF per year)
Additional Info	The project resulted in over 2.3 million lbs of greenhouse gas emissions reductions annually * See two graphs below

Strategy/Solution:
The campus used a Monitoring Based Commissioning (MBCx) process to build long term monitoring capabilities that would not only enable an immediate tune up of buildings on campus, but also lay the foundation for persistent savings over time. Using this approach, permanent trending and archiving of key operational metrics for each major system – air handlers, boilers, chilled water, and total energy use – was established. These data revealed significant inefficiencies in the air handler and boiler control systems that resulted in issues such as, simultaneous heating and cooling, poor scheduling, and broken or leaky control valves and dampers. With relatively simple upgrades to the control system that were enabled by the MBCx process, the campus was able to reduce utility costs for four buildings by over $160,000 per year and increase the capacity of the central chilled water storage system.

Before



After



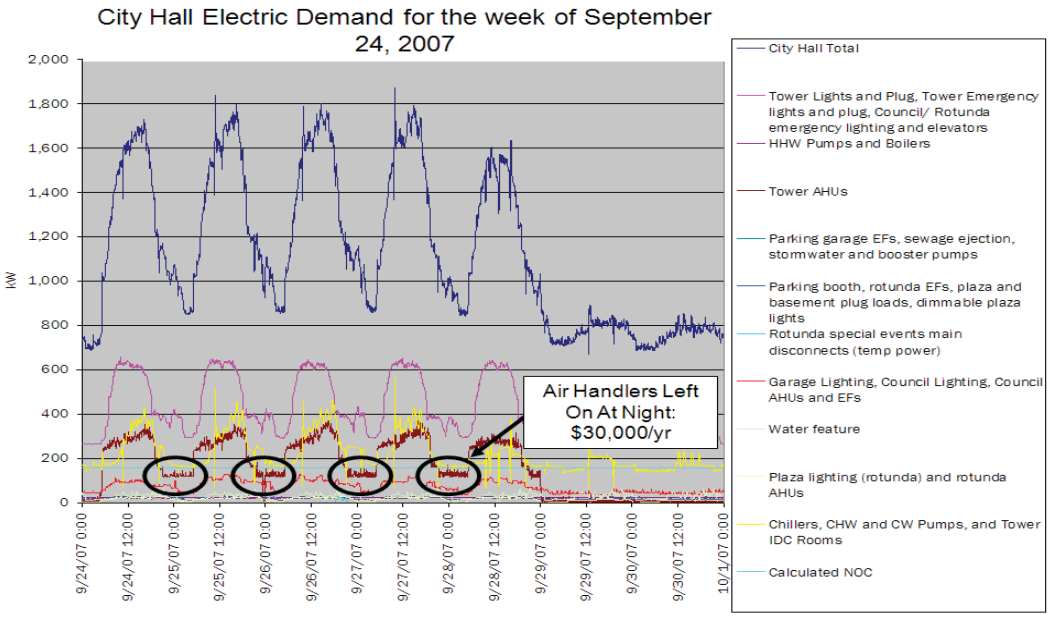
Metering	
Problem	**Energy efficiency changes go unrecognized without metering capability**
Facility Location	Northern California
Building Type	Commercial Office, historic
Ownership (portfolio, etc)	Portfolio
Construction Date	1905
Cost Savings	$110,000

Strategy/Solution:
The building engineer made a change in the static pressure that resulted in significant energy and cost savings. There wasn't a submeter in place and therefore the usage was not being trended or analyzed. During the LEED EB process, the facility team analyzed the energy usage for two years and in the comparison of the two years was able to identify the savings resulting from the operational change. Without a sub-meter, however the change went unnoticed. At the same time the change was made, energy use spiked due to a demand of another system, therefore the savings were in a sense camouflaged. The facility management recognized the value of sub-meters in the management of energy and has subsequently installed a few meters in the building.

Commissioning	
Problem	**Discovery made during the ongoing commissioning process**
Facility Location	Northern California
Building Type	Commercial Office Campus
Ownership (portfolio, etc)	Part of a large portfolio
Construction Date	2006
Resource Savings	Exact savings unknown
Cost Savings	Approximately $60,000
Strategy/Solution: The facility team completed an in-house commissioning effort of their major base building systems. The building staff has a rigorous preventative maintenance program in place and prevents major systematic issues. Regardless, the team still found opportunities for improved efficiency and optimization. For instance, the commissioning procedures revealed a pipe that was un-hooked. By making that simple repair, the building engineering staff saved approximately $60,000 per year.	

Commissioning	
Problem	**The building used a Monitoring Based Commissioning process during a LEED EB certification effort.**
Facility Location	Northern California
Building Type	Offices and City Hall
Ownership (portfolio)	City-owned
Construction Date	2005
Resource Savings	300,000kWh per year
Cost Savings	$30,000 per year
Additional Info	The graphs below show the trending that revealed the error with the air handling units.

Strategy/Solution:
City Hall was a newly constructed, high performance building designed with both passive and active energy efficiency features, such as natural daylighting, a very efficient chilled water cooling system, and a state of the art building automation system with robust energy sub-metering. However, the sub-metering data were not being analyzed by staff to identify problems and opportunities for energy efficiency. By simply graphing the data for the first time, a significant air handler scheduling problem was noticed – eighteen (18) of the total thirty six (36) air handling units were not turning off at night. Within an hour of the discovery, the schedules were corrected, saving more than 300,000kWh per year in electricity and over $30,000 in utility costs.



Scheduling	
Problem	**Low Energy Star Score – related to LEED EB eligibility**
Facility Location	Northern California
Building Type	Commercial Office Campus (4 buildings)
Ownership (portfolio, etc)	The lessee pursued LEED certification, not the owner
Construction Date	1970's
Resource Savings	HVAC and lighting
Cost Savings	TBD

Strategy/Solution:
The Building Engineering Team reviewed the existing equipment and lighting schedules and compared that schedule to the actual hours of occupancy (for the majority of employees), the cleaning crew hours and override schedule. The Team realized that the equipment was running on the weekends (Saturday and Sunday) for the occasional staff that worked in the facility for a few hours on Saturday or Sunday. The facilities team observed the pattern of the occupants regarding weekend occupancy and subsequently decided to change the weekend schedule so the systems were on ½ day Saturday and completely off on Sunday. Occupant comfort is the priority, so if any occupant had need for heating or cooling during the new "off hours", they are able to notify the facilities department and request after hours service.
In regards to the lighting override, the afterhours cleaning crew is in the space for approximately less than an hour, therefore the lighting override was modified from two (2) hours to one (1) hour. These changes exemplified the adopted process of systematically reviewing current practices and making simple changes.

CTG Case Studies – Rebates

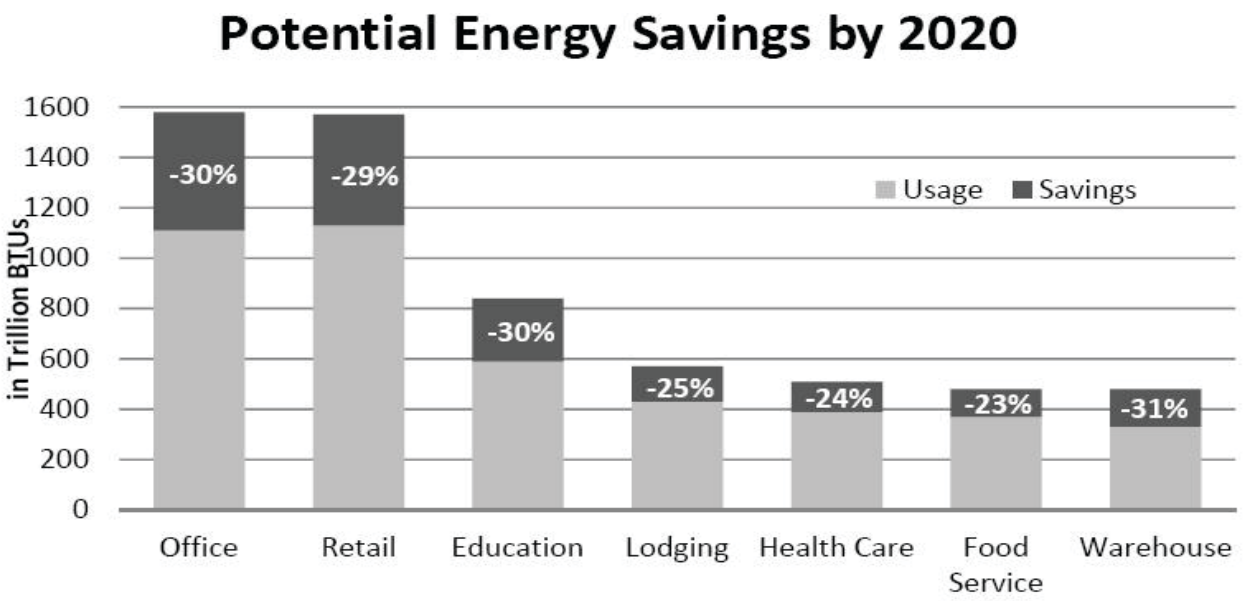
Rebates	
Problem	**Participation in a utility Retro Commissioning incentive program**
Facility Location	Southern California
Building Type	Commercial Office Building Campus
Ownership (portfolio, etc)	Portfolio
Construction Date	1970 - 1997
Resource Savings	1,845,806 kWh per year
Cost Savings	$252,316

Strategy/Solution:
The campus of commercial office buildings participated in a utility incentive program to complete a Retro Commissioning Program for all buildings on the campus. The local utility paid for a third party to conduct an investigation and analysis and produce a list of suggested measures. The measures were implemented by the building management and the incentives were paid based on the measures implemented. The changes made did not include any structural changes or major equipment changes, but instead were largely schedule and setpoint adjustments.

Looking at energy savings on a broader perspective

McKinsey and Company recently conducted a study to explore the potential of energy savings in the United States by 2020.[10] There is no question that the savings potential is significant. See Figure Three for an overview of the potential savings by business sector.

Figure Three: Efficiency Potential in Commercial Buildings by 2020. [11]



Source: McKinsey Study: Unlocking Energy Efficiency in the US Economy, July 2009

McKinsey has also identified how these savings will be achieved:

- Requiring energy benchmarking for buildings;
- Establishing a public-private partnership through a government loan guarantee fund;
- Enabling creative financing solutions; and/or
- Introducing mandatory assessments and upgrades.

In Summary:

The process we have described above will get you on the right path to preparing your enterprise for a more global initiative for energy efficiency. Whether mandated or voluntary, the opportunity is there to reduce energy usage, and thereby energy costs, by a significant amount. You now have an opportunity to contribute your part at the local level and to participate in this essential global movement.

Phew! That's a lot of data to chew on. Until we started this project a lot of us on the writing team didn't fully appreciate what went on down in the basement. We've had quite an education, and we trust you have too.

We're now going to move on to a very closely- related topic: lighting. We decided to separate lighting from energy because the issues—and the opportunities—are so complex. Lighting is much more than just installing low-power bulbs. Lighting (along with temperature, air quality, and noise) is one of the major ergonomic factors that directly impacts performance in the workplace. Just ask someone what they think about the environment in their workplace, and very quickly you'll get an earful about lighting. Thus, in the interests of digging as deep as we can, here we go to Chapter Seven for a "look at lighting."

References

[1]http://www.greenbuildings.com

[2]CTG Energetics. 16 Technology Drive, Suite 109, Irvine, CA 92618. Tel: (949) 790-0010 Fax: (949) 790-0020 http://www.ctg-net.com/energetics

[3]http://en.wikipedia.org/wiki/Global_Reporting_Initiative

[4]http://en.wikipedia.org/wiki/United_Nations_Environment_Programme

[5]http://www.energystar.gov/index.cfm?c=evaluate_performance.bus_portfoliomanager

[6]http://en.wikipedia.org/wiki/Green_Globe

[7]http://ezinearticles.com/?10-Benefits-of-Solar-Energy&id=2154024

[8]http://www.nanosolar.com/

[9]http://www.nanosolar.com/technology.htm

[10]http://www.mckinsey.com/clientservice/electricpowernaturalgas/US_energy_efficiency/

[11]Source: McKinsey & Company, "Unlocking Energy Efficiency in the United States," July 2009.

Edie Fee, MCR
Partner, iNPOINT Advisors

Edie Fee is a recognized industry leader in corporate real estate who integrates 20+ years experience in corporate real estate, organizational development and information technology in both consulting and operating roles. Edie served as the Vice President of Corporate Real Estate for Avco Financial Services until 1996. In this role, Edie was responsible for a global portfolio of over 1500 properties consisting of retail, office, corporate headquarters and a data center. She was responsible for the real estate operations (site selection, lease negotiation, tenant improvements) as well as all facility management and property management for the sites. Edie also was responsible for disaster recovery planning. This strategic role gave Edie the opportunity to incorporate real estate planning into the overall corporate strategic planning.

Following this assignment, Edie moved into consulting for major corporate clients. In this role she managed a corporate initiative to develop a new master plan for a 1Msf facility in order to increase density by 25%. This was also a sustainability initiative in that the interior walls were all movable/reusable walls. She also led an initiative to implement a CMMS system into a major governmental agency. The key to this effort was the effective use of change management strategies to get the acceptance by the users of the system. Edie has subsequently led numerous corporate real estate initiatives incorporating strong elements of change management, sustainability and corporate branding to insure success of the projects.

Edie has made a commitment to serve her community throughout her work life. She has served in leadership roles in numerous community organizations such as the Red Cross and the American Diabetes Association. She served as chair of the board for Mission Hospital Regional Medical Center and Leadership Tomorrow. Edie Currently serves on the board of Camino Health Center and Habitat for Humanity of Orange County. Edie's most recent community interest area is social entrepreneurship. She is currently leading initiatives in two non-profits, one of which will be an innovative sustainable energy product. Edie is also serving as the CEO of a new lifestyle web site, www.FeelBetterNetwork.com.

Edie received the certification of Master of Corporate Real Estate, MCR, from CoreNet and has maintained active status since 1994. She was also named one of the top women of the year by the OC Metro magazine, one of the 10 top women in Facilities Management in California by Facilities Magazine and is featured in the book, What it Takes.

Edie is a partner with iNPOINT Advisors and can be reached at efee@inpointadvisors.com

7 Chapter Seven

Lighting: Illuminating the Path to Savings

We said these three middle chapters would take you down into the weeds. And we may have outdone ourselves with this chapter. But bear with us. There are a ton of things you need to know about lighting if you want to improve operations and cut costs, and we didn't want to leave out anything that could make a difference. So grab an extra cup of coffee, prop up your feet, and dig in. The good news is that you can save a whole lot of money very quickly by following Shad's recommendations. The truth is that most facilities managers and real estate professionals don't give much, if any, thought to lighting, its impact, and how expensive it can be when they're doing original construction or even tenant improvement work. Cheaper up-front building costs hardly ever translate into efficiency and long-term cost effectiveness. Here's our contribution to correct that all-too-common "penny-wise, pound foolish" mistake.

Shad Arnold, LC, CLC, LS
Performance Lighting Systems

Note: This chapter contains edited excerpts from the complete work by the author. You can read it in its entirety and connect directly to additional Internet resources at: http://www.acuitybrands.com/CustomerResources/Training.aspx . (Click on Training Resources in the menu in the upper left corner.)

The Idea in Brief

Lighting is an exciting and valuable part of any building aesthetic. When coupled with the demand for more effective and efficient use of our facilities, lighting presents you as a Facility Manager with a unique opportunity to implement a variety of new cost-saving measures that benefit the owner, tenants, visitors, and the community at large.

According to the Department of Energy, the national energy use average for commercial lighting is an astounding 25% of a facility's total energy demand, surpassed only by HVAC loads, which reach 30%. With statistics like that, proactive facility managers are looking for ways to curb that percentage, save their facility money right now, and demonstrate lasting value in the process.

Executive Summary

This chapter is designed to provide you with a playbook of sorts, which, after a review of functional material references and an understanding of what is available in the lighting industry, will enable you to identify prescribed measures and develop cost-cutting, energy-efficient strategies. Once implemented at your facility, those strategies will be valuable and sustainable. Let's call it "Save and Sustain." We begin with a discussion of lamps and ballasts and move from there to lighting controls, exterior lighting, rebates, incentives, LEED and tax credits. As you read this chapter, you will see that we have highlighted in bold many specific cost savings measures that we think will be of immediate interest.

Ballasts

Simply put, while it may not be your responsibility to be a lamp and ballast expert, it is your duty to know what the best lamp and ballast specifications are for your facility's needs. We can no longer simply assume that a particular lamp and ballast combination is the correct choice merely because it illuminates the space; we must be able to predict its overall value to the facility before it is considered for installation.

Lamp and ballast manufacturers offer classes (often free of charge) in an effort to keep you up-to-date on the latest that the industry has to offer. Classes take place at their training facilities and often at local training and conference venues as well. Wherever they are, go! The courses will make you a better manager, and they will create a new sense of authority and confidence in your day-to-day work.

Ballasts are electronic or magnetic devices used with an electric-discharge lamp [such as fluorescent or high-intensity discharge lamps (HID) to obtain the required conditions (waveform, current, and voltage) for starting and functioning. Ballasts are increasingly assuming a larger role in efficient design.

Starting correctly and managing the course of electrical current to the gas discharge light source is no longer the limiting function of the ballast. Aside from the many dimming ballasts that are available, today's modern ballasts are divided into a number of classifications for the fluorescent lamp category: Preheat (PH), Rapid Start (RS); and Instant Start (IS). Within these categories specific technologies offer additional benefits.

Program Start Ballast (Preheat) –Ballast that pre-heats the filaments of the lamp without ignition, then utilizes Open Circuit Voltage (OCV) to start the lamp.

Rapid Start Ballast –Ballast in which the lamp filaments are heated during the application of Open Circuit Voltage (OCV) to assist in lamp ignition.

Instant Start Ballast – Ballast intended to start a fluorescent lamp the moment it is electrically energized.

Magnetic Ballasts vs. Electronic Ballasts

Stated in the purest form, Magnetic Ballasts ("Core and Coil"), with their copper or aluminum windings around a central iron core, are inherently less efficient, heavier, chemically "dirtier," and run hotter than their electronic cousins.

By comparison, Electronic Ballasts are high-frequency (greater than 25 kHz), solid-state, technology-based units that run more efficiently, increase lamp efficacy, operate longer and with fewer failures, are quieter, and are considerably smaller.

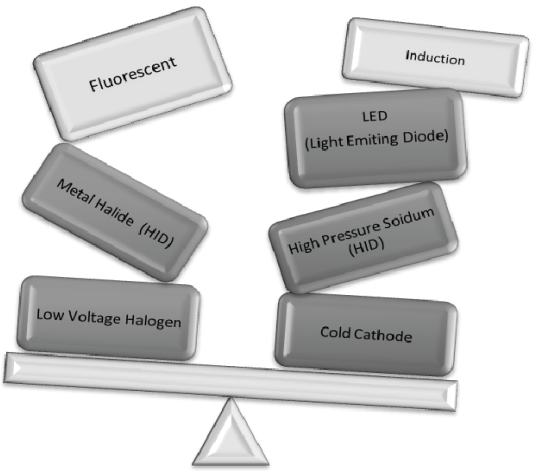
Lamps (not Bulbs!)

If we are all being honest with ourselves, keeping up with lamp and ballast changes is about as thrilling as removing a splinter from your finger, but for Facility Managers it is an only-slightly painful task that will be rewarding to you and your facility over time if you commit to doing it. Every manager needs to understand the basics and be aware of the current advancements, as well as the coming technologies.

Your facility deserves the best. Don't settle for inferior lamp products simply because they may be "cheaper." I am thinking particularly of the multitude of off-shore brands of lamps that are offered today, mostly from Asia. Many of these manufacturers do not guarantee color temperature, offer poor CRI, do not guard against color shift, and offer products that do not live up to rated lamp life. They are often unregulated, which could mean higher mercury content. When you, or your staff, have to replace these products more frequently than you do domestic and other recognized brands, you will spend your "savings" time, and time again. In the end, the cheaper lamps are never a bargain. Stick to the tried and true brands.

Commercial Lamp Types

In a vast majority of facilities, there are many different lamps in use, but you should ask whether those lamps are working for, or against, your bottom line. Keeping them all in balance can appear overwhelming, but with a little effort you can come out on top.



Two important factors in the selection of the primary lamp source in your facility are: (1) the rated lamp life; and (2) the total lumens per watt (LPW).

For most lamp types, rated lamp life is the length of time between the first use and the point when 50% of the lamps in a statistically large sample have died.

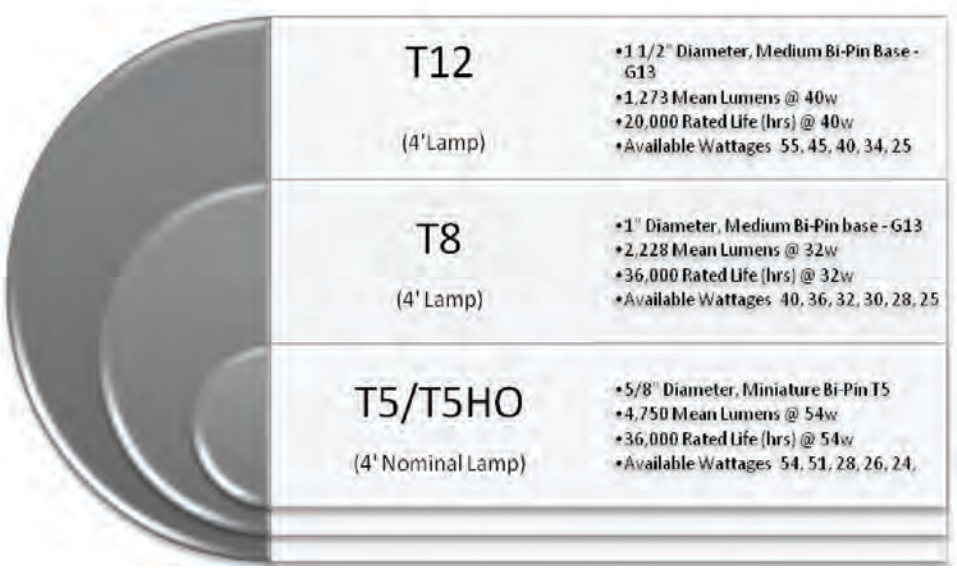
Lumens per watt measures the efficiency of a lamp—the sum total of light that is produced for each watt of electricity consumed. Higher LPW equals more light for your dollar!

With that in mind, let's look at some of the basics related to the most common commercial lamp technologies that are likely in-use today within your facility: linear fluorescent lamps. Getting a handle on the core capabilities of the linear fluorescent lamp offerings will enable you to make the right decisions in your facility.

Figure One is a snap-shot into the product offerings from the major lamp manufacturers for the T12, T8, and T5 lamp in a 4-foot lamp "envelope." Lamp and ballast efficiencies and efficacies are in a constant state of improvement, so it is advisable to consult your lamp representative for information about the "new and improved" versions, as well as what is coming up for future production.

With T12, T8, and T5HO being the most widespread lamp designations throughout U.S. facilities, let's take a look at how they stack up in lumen (light) output using a 4-foot lamp standard.[1]

Figure One: Major Product Offerings for T12, T8, and T5HO Lamps



[1] Comprehensive lamp and ballast data may be obtained from the following websites and their associated product catalogs: http://www.gelighting.com; http://www.philips.com; http://www.sylvania.com; http://www.ushio.com;

It should go without saying that, in the progression of lamp technology, the T12 is antiquated, and should never be specified for use in any facility. If your facility has any T12 lamps, your first order of business should be to invest in a replacement lamp/fixture.

The common replacement for the T12 is the T8 lamp, which for reasons of increased lamp life, efficiency, and lumen output, is the standard by which all other fluorescent lamps are graded. The T8 is the most commonly-recognized efficient lamp source.

CRI & Color Temperature

Color Rendering Index (CRI) – A measure of the degree of color shift that objects undergo while illuminated by the light source in comparison to the same objects being illuminated by a reference source of comparable color temperature.

Have you ever encountered the following problem? After selecting a pair of "black" pants from your closet, or a pair of "black" socks from your sock drawer, you find that you have inadvertently selected navy blue? That likely occurred under a lamp source that was very low in CRI. With a fluorescent lamp source with good CRI, your selection would be swift and accurate because a good CRI allows your eye to recognize more of the full color spectrum that other lamp sources can obscure.

This factor is important to your facility in a number of ways, but two of the more significant may be:

1. 1. CRI is crucial in the prompt recognition of color, so if your facility is involved in printing, food processing, sort-assembly, electronics, or any field in which color identification is important, you must specify and use high-CRI lamp sources.
2. 2. You look better! Deny it if you like, but we all want to look our best, and the workplace is no exception. High-CRI lamps render all skin tones "healthier" and vastly improved over the low-CRI lamps. When the people visiting and working within your facility see that they look better, they will feel better, and that translates into a positive working environment that you really cannot put a price on.

The accepted form of measurement, and something that helps all of us to understand the chromaticity value assigned to a lamp, is Color Temperature/ Chromaticity.

Prior to the Color Temperature scale, commercial fluorescent lamps were referred to by any number of innocuous but descriptive labeling nomenclatures such as "Cool White," "Warm White," or other trade/brand labels. The reference to "Cool" or "Warm" came from the color that the lamp appeared to illuminate. "Cool White" appeared bright and white, while the "Warm White" appeared warm and soft to the eye—and perhaps not as bright.

The problem is that it was a subjective label; and before long, designers, contractors, and facility managers were "mixing" colors in their attempts to achieve the desired lamp color within a space. In those days, it was not uncommon to see a 3-lamp recessed light fixture with one "Warm White" lamp, and two "Cool White lamps installed to give a "healthy mix" of the two colors. The solution? Correlated Color Temperature – CCT.

Color temperature today is generally described with an easy-to-understand color scale by unit/size, Kelvin (K). Kelvin is now the foundation of all temperature measurement. Each Kelvin step is equivalent to one degree Celsius.

The vast majority of tenant improvements and general office lighting is specified and installed utilizing 3500k lamps. The reason is clear; the bright "white" light of 4100k does not appeal to the larger segment of our population, and the same holds true for the very warm color of the 3000k. Mainstream opinion is that 3500k, with its middle-of-the-road color attributes, is exactly what is comfortable to work under and pleasing to be seen in.

Low color temperature means a decidedly warmer (with more red and yellow hues) light, while the high color temperatures emit a cooler (closer to blue) light – all dependant on the phosphors used. A handy way to remember the scale below is to think of the blue sky, the white snow of the mountains, the sunset and sunrise tones in the prairies, and the soft candlelight glow at a dining table.

Figure Two: Color Temperatures

Typical Color Temperatures	
9000 – 12000K	Blue Sky
6500 – 7500K.	Overcast Sky
5500 – 5600K	Photo Flash / Noon-Day Sunlight
4500 – 5000K	Xenon Lamp / Arc Light
4100K	**"Cool White"**
3500K	**"Medium" / "Cool/Warm Mix"**
3400K	Tungsten Halogen Lamp / 1 hour to Dusk/Dawn
3200K	Sunrise/Sunset
3000K	**"Warm White"**/200w Incandescent Lamp
2680K	40w Incandescent Lamp
1500K	Candlelight

Induction Lamps

Induction lamps utilize power through a coil to produce a very powerful magnetic field that travels through the glass to produce light. The atomic particles of mercury (via amalgam pellet) are shifted from the outside of the lamp envelope through a process of electromagnetic fields, which is absorbed by the phosphor coatings and causes it to emit light. This technology differs dramatically from the standard fluorescent lamp because there are no electrical connections, electrodes, or filaments to fail internally. These factors ensure a long life (100,000 hrs) that surpasses all other commercially available lamp sources.

Induction Lamps come in Square Tubular, Round Tubular, Spherical, and the new Round Tubular—Compact, Self-Ballasted forms. They are increasingly being integrated into previously unexploited areas of lighting manufacture.

LED (Light Emitting Diode)/SSL (Solid State Lighting)

There is much to be said about the LED craze. Yes, the craze! From the invention of the first visible LED in 1962 by General Electric to the present, the LED has developed into a stimulating product-segment that has kept all eyes fixed (perhaps cross-eyed in some cases), but to what end?

To the keen observer, the past ten years in particular has been witness to the LED's progression from a nice concept and vehicle for energy savings, to a vague promise of near-eternal lamp life, to an obsessive worship of its loosely interpreted "Green" value. Fad, trend, fashion, or rage—whatever you call it—at some point it had to hit the wall I like to refer to as reality.

Thankfully, ten years has a way of curbing excessive enthusiasm over un-proven claims and unrealistic dreams of a utopian "Green" society made up entirely of LED products. That forced wisdom of sorts has led the industry's preeminent lighting manufacturers to adopt standards and best-practices in line with the reality of what LED technology is today and could be tomorrow.

The new LED/SSL technologies standards of testing were developed under the direction of the Department of Energy's CALiPER Program. This program fills a crucial void that – prior to its implementation—left both the specification community and the consumer without a genuine understanding of a product's true performance, or how it addresses the four basics of LEDs – Energy Efficiency, Color Quality, LED Life, and Thermal Management.[2]

Because the vast numbers of LED products that are available in the market display a broad range of operational function and efficiency, there was a need for consistent, unbiased product performance data to promote the growing market for LED products. The CALiPER testing metric ensures that the product information described in advertising or sales brochures is both legitimate and accurate to a reasonable standard.

[2]Learn more about LEDs and the CALiPER Program at: http://www1.eere.energy.gov/buildings/ssl/caliper.html

Enough of the downbeat. LED technology has a lot to offer, and in subsequent sections of this chapter, you will read a number of positive and, in some cases, "glowing" reports of the use and usefulness of the LED in your facility. LED is here to stay. It is in a state of perpetual growth, and that demands the best out of the lighting industry's premier manufacturers. The key to successfully implementing LED technology in your facility is to use only trusted and established manufacturers that will stand behind their product and help you create a sustainable future for your facility.

Interior Lighting

Interior Lighting—clearly defined as the luminaries that are specified and in-use within the building shell—presents you as a facility manager with a number of distinctive opportunities to "Save and Sustain".

Interior Lighting within a facility often includes a combination of recessed "downlights," troffers, direct/indirect pendants, emergency/exit/egress lighting, warehouse/storage fixtures, decorative units, and specialty lighting. Each of these types of lighting provides the Facility Manager with a number of "Save and Sustain" strategies.

LEDs have already eclipsed incandescent sources; and, when fixture performance is considered, are powering past compact fluorescent in real-world applications today. With long service life, compact size, and far greater directional control in high-application efficiencies, LED technology produces a unique opportunity to re-think many of the old paradigms of lighting system design. As the performance of LEDs continues its rapid expansion and the cost of light delivered by LEDs continues to drop, the obvious choice in general illumination will inevitably become solid-state illumination.

Energy savings from solid-state lighting does not come with the liability of mercury that fluorescent lamps require; and reduction in energy use overall means a reduction in greenhouse gas emissions, reduced mercury and phosphor emissions from coal burning, a slower depletion of fossil fuel sources, reduced contribution to landfills from coal cinder, and a lower demand to pursue nuclear and other hazardous sources of energy.

In addition, solid-state lighting is 25 to 45% more efficient than CFL and HID sources. Maintenance costs to the facility are dramatically reduced because re-lamping, ballast replacements, and cleaning are significantly reduced. These products are sustainable and 100% recyclable at the end of their projected 50,000 to 70,000 hour life.

Source: Renaissance Lighting

Are you buying lamps from a home improvement store, or another retail source?
Here's a tip: If you purchase your lamps by the case, and from your local Electrical Wholesale Distributor, you will watch your lamp costs plummet!
Don't buy retail.
Open an account with a Distributor today, and you'll be counting your savings tomorrow!

Recessed Downlights

The advancement of recessed downlight technologies has led the industry to a predictive juncture: LED. While it is important to note that compact fluorescent is still the most common and cost-effective form of efficient down lighting, the reality of the day is that LED is here to stay, and its value to the end-user is increasing every day. For the facility that is looking for long-term value and sustainable design, the new LED products are well worth the upgrade cost.

For those reasons, this section will focus on the LED downlight offerings, and the ways a facility can benefit by their implementation.

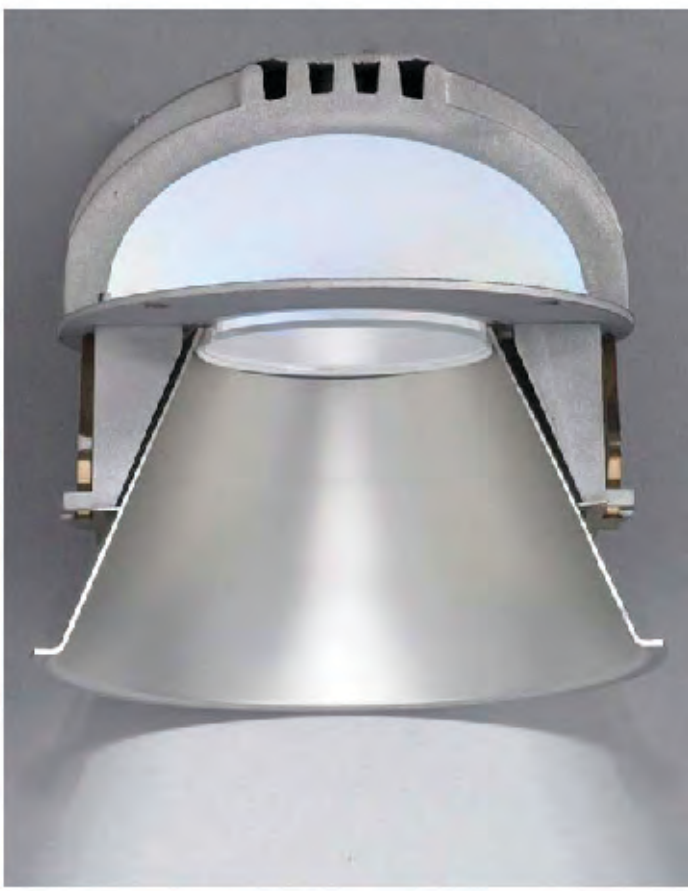
Beginning with what not to do in a facility, it is important to understand that LED is a light source that you should never use where the LED is within the direct-view of an occupant/user, unless it is specifically designed to "spotlight" a subject (such as with track lighting, etc.), or is shielded in some form.

Care should be taken to ensure that the lamp cannot shine directly into the occupant's eye. As with other direct and point-source lamps, the occupant will experience a great deal of discomfort glare when the visual plane and the lamp image converge, which could actually damage the eye with prolonged direct viewing.

Design applications utilizing the "Constructive Occlusion" technology will realize benefits that include:

- no pixilation;
- no striations;
- no glare;
- no LED lumen and color variations;
- true "cut-off" control;
- superior aesthetics; and
- exceptional uniformity

While offering a relatively typical outer housing, the new enhanced technology of this unit comes complete with thermal displacement features, and a fully encapsulated inner housing with a lens that gives it a "wet location" listing. The wet location listing is an additional, and very important, facet of design because it means that your facility is capable of utilizing the low-wattage LED fixture in "wet" or "dry" applications, exponentially increasing your facility's ability to employ it in the vast majority of recessed areas in a facility.[3]



Cross-section view of an LED downlight utilizing 'Constructive Occlusion' technology with a sealed lens apparatus that protects the LEDs from dirt/debris, and maintenance intrution, and allows the unit to be used in "wet" locations. Courtesy of Renaissance Lighting

[3] Launch your search for recessed high-efficient LED downlights at these sites: http://www.gothamlighting.com; http://www.lithonia.com/DOM; and http://www.renaissancelighting.com

Recessed High Efficiency Troffers

Certainly by frequency of use, the recessed "Troffer" is the workhorse of the U.S. office, retail, and general indoor work environment. With standard sizes in 1' x 1', 2' x 2', 1' x 4', and 2' x 4', troffers find their place in t-bar ceilings, suspended metal ceilings, hard-lid/gyp-board ceilings, and a host of custom ceiling apparatuses.

The idea behind the fixture is simple: a series of lamps nestled within a reflector assembly that doubles as a ballast cover, within a metal housing; and is sealed or closed-in with a lens. The lens material tells an important story about a troffer. It is the "body" around the "engine;" and, like automobile design-science, the body design—in this case, the lens—determines to a large extent how the fixture will present the light in the space. Efficiency, efficacy, glare, reflection, refraction, and more, are all determined by the lens design and implementation.

For this reason, we will focus this section on the new technologies designed to turn your facility into an energy-efficient working space while simultaneously giving it an aesthetic boost.

Used in conjunction with a step ballast, and the standard "a/b" switching that most facilities already have in place, these new technologies, with their high-efficient ballasts, lamps, and redesigned housings, are poised to deliver great savings to your facility.

Add photocells, daylight harvesting devices, occupancy sensors, and a wide variety of energy and lighting management systems to the mix, and it can easily translate into a sixty percent-plus savings in your lighting load over your existing 3lamp troffers. That is going to have you seeing "Green." Going "Green" in this case means more green ($) in your facility's budget to utilize elsewhere.

A Real-World Case Study: California State University Long Beach[4]

"As part of the Vivian Engineering Building (5 story) renovation at California State University, Long Beach, existing 3 lamp fluorescent light fixtures were replaced with energy efficient, 2 lamp RT5 fixtures that employ environmentally friendly lamps, and carry an extended replacement warranty on lamps and ballasts.

The intent of the renovation was to minimize re-circuiting and reduce energy consumption, while facilitating a volumetric component to the building's interior aesthetics.

Following an intense light fixture and lamp evaluation, the replacement fixtures were proposed for all labs, offices, and corridors. Ultimately, a fixture that provided improved footcandles, volumetric lighting, and consumed 30 fewer watts per fixture was selected.

The aesthetically pleasing volumetric fixture equipped with two (2) standard 28 watt T5 lamps featured an innovative optical design and a unique lamp/ballast combination. The new recessed fixtures provided a uniform distribution of light, improved visual comfort, and elevated the room surface luminance ratios (uniformity).

The fixtures uniformly illuminated the entire space, while eliminating harsh shadows and the "cave effect" typical of the sharp cutoff (existing) parabolic fixtures.

The lamp and ballast system were the strongest contributing factors to the efficiency of the fixture. The ballast included end-of-lamp-life sensing and stepped switching output, allowing illumination levels to be uniformly reduced by 50% using bi-level occupancy sensors already in place. The new T5 lamps employed in the light fixtures are also environmentally friendly, consume less energy, and contained less mercury than the lamps they replaced.

As a result of the energy savings, a reduction of approximately 50% of total energy costs were realized, while improving quality of illumination, and reducing impact to the environment – in effect, reducing carbon emissions an equivalent of 285,000 lbs."

Building Annual Totals

Total Existing Kilowatt Hours per Year:	322,826
Total Realized Kilowatt Hours per Year	138,657
Average Cost per Kilowatt-Hour (Cents)	0.11
Existing Annual Building Power Cost	$35,511
New Annual Building Power Cost	$15,252
Simple Payback	9.6 years

[4]Case Study courtesy of P2S Engineering, Inc.

Retrofit and Remodel

Over the past 25 years, the industry has witnessed a number of "Retrofit" or "Remodel" kits come and go within the marketplace. Each of these "kits" came with a plan and a promise of energy efficiency and increased light output. Some of the kits worked—for a while, anyway—but at what cost to the facility?

The obvious failings with the "kit" strategy were fit, form, and function. The kits did not fit and align properly when used in parabolic fixtures. They did not form consistently to the ballast cover, or around the lamp assembly. They also did not function efficiently and effectively in many cases because of the misalignment of the lamp and reflector assembly. Add in the increased electrostatic elements inherent with the post-production reflector system, and the fixture became a dust-vacuum that required increased maintenance to keep clean and in working order—not exactly an example of "Save and Sustain."

The strategy of replacing the lamps and ballast, and installing some sort of highly-reflective tape or metal reflector seemed like a good one at the time—but that was then and this is now. Facility Managers today recognize that an outdated kit cannot address the lens/louver component; and, as such, is missing critical elements of both efficiency and efficacy. The lens must also be replaced in order to realize true efficiency and efficacy.

Linear Direct/Indirect

Direct and/or indirect light fixtures refer simply to the nature of the light output of the unit. They are linear in design and, depending upon the specification, will direct the light "directly" or "indirectly" within a space. In many cases, a combination of the two designs is utilized to provide an increased sense of visual comfort and bring a heightened feeling of balance in the workplace.

Until recently, the direct/indirect market was largely considered an inefficient upgrade to the standard building troffer system, but current ballast and lamp advancements have propelled direct/indirect light fixtures into a "Green," and very sustainable, choice for a variety of areas within your facility.

Although the vast majority of direct/indirect linear fixtures are operating within a 55% to 75% efficiency range, there is a growing focus in the lighting industry on super-efficient linear products. Products that offer step-range and full-range dimming ballasts and efficient lamp technologies, and that incorporate lighting controls are growing in popularity, and are seen as the obvious "next step" by many facilities.

Progressive lighting manufacturers focused on advancing the art and science of sustainable fixture design and innovation, are increasingly looking to Intellectual Property firms for what is "next."

Product designs that reflect the consumer's desire to integrate new energy efficient "green" technologies, and demostrate a passion for features and creative aethetics is the order of the day.

New illuminated forms that virtually blend with the ceiling environment establish a remarkably clean and illuminated plane. Couple that with efficient lamp offerings, and gradient lens materials and you have a "Save and Sustain" fixture with optimal visual comfort.

Photo & Linear Fluorescent/LED Fixture Design
Courtesy of Pinpoint Innovation ®, Inc.

Decorative & Specialty Lighting

In recent years, the decorative and specialty segments of the lighting industry have begun to acknowledge the need for more efficient products that help the Facility Manager "Save and Sustain."

What was once a vast kilowatt wasteland that only used incandescent and high-wattage, low-voltage sources is now an ever-increasing oasis of LED, fluorescent, and low-wattage low-voltage alternatives that make choosing decorative and specialty fixtures guilt-free. These positive changes are inspiring more and more architects, interior designers, facilities managers, and electrical engineers to reconsider something that they had for so long put out of their minds: that an energy-efficient light fixture can be decorative as well.

The examples in Figure Four demonstrate the adaptable characteristics of LED and fluorescent lamp sources. Segmented flexible LED "rope light, 10- to 18-watt compact fluorescent pendants, and 3-watt LED track light spots, sconces, step lights, and pendants are just a few of the options available to the facility manager who wants to improve the aesthetic of the space, while cutting lighting loads at the same time.

Figure Three: Examples of LED and Fluorescent Fixtures[5]

[5]Photos courtesy of Bruck Lighting Systems

Lighting Controls

Lighting controls, long considered by many to be some sort of luxury, are anything but a wild extravagance in today's facilities. Today mandated and optional lighting controls are responsible for saving facilities around the world millions of dollars a day by preventing the wholesale waste of electricity. That decidedly-focused effort on sustainable cost savings is exactly what every facility manager should be thinking about when developing "Save and Sustain" tactics.

Basic lighting control strategies include wall- and/or ceiling-mounted motion sensors for offices, open spaces, warehouses, hallways, outdoor environments, and more. With a strategic lighting control system, the energy savings in a facility can be astounding.

Managing use, function, and waste is at the core of cutting-edge lighting control systems. Common system components include control panels, programmable switches, photo sensors, relays, software, and various accessories.

The national energy average savings following the installation of occupancy sensors in a facility is over 15%. And that number can more than triple when a complete lighting control system is incorporated.

You can determine how effective occupancy sensors could help your facility "Save and Sustain" strategy by using a tool known as a Data Logger®[6]. Defined simply as a device that logs the data from a specialized occupancy sensor, a Data Logger enables occupant activity to be recorded and then analyzed for control system consideration.

The Data Logger presents the information in a "Lights On" vs. "Occupancy" timeline and has the ability to produce customized reporting that quantifies potential energy savings from occupancy and other lighting control projects. These systems are typically provided to qualified facilities at no charge by the lighting control manufacturer's representative.

[6]Data Logger is a registered trademark of Sensor Switch, Inc. (http://www.sensorswitch.com)

Until now, the traditional topologies of facility control—time-based control versus sensor-based control—have separated the facility manager from a simple "one-stop shop" for ultimate lighting control. Systems now exist that tie the two technologies together without central-run hardwire installations. These new systems eliminate the need for overlapping lighting control protocols by incorporating time-based controls with existing sensor-based control.

Example of a wall mounted motion Sensor

Example of a wall mounted programable interface

Photos courtesy of Sensor Switch Inc.

This new technology utilizes the relays present in all sensors and power packs to switch local lighting circuits. Tied to system devices, the relays function as a network that may be controlled locally via an LCD "Gateway" device, and/or remotely, using the system software. One of the primary benefits of this type of system is that it allows the facility manager to program use schedules and develop profiles.

The advantages of this system are four-fold:

It maximizes the operational and energy efficiency of the facility's lighting system.

It gives the Facility Manager the freedom to quickly and easily change the facility's lighting status to implement load shedding or safety overrides.

Compromises between tenant/occupant convenience and energy savings are eliminated.

Remote system upgrades are easily implemented by the Facility Manager or approved staff.

Other systems available to the Facility Manager include programmable wall switches, keypads, multi-scene controllers, and touch panel GUI systems; all designed to control and amalgamate lighting within the workspace.

Combine those devices with any one of the many touch-screen options, and available software protocols, and your facility will quickly realize a "Save and Sustain" story that will be told for many years.

If that is not enough, the available software now often includes a custom, configurable interface to monitor, manage, and control every device in every room remotely, from any computer. And if you want to know what your facilities' current energy use, CO^2 footprint, and up-to-the-minute savings are, there is a program for that as well.

The lighting controls industry has changed dramatically, and it is your job as a facility manager to take advantage of that change for the cost-saving benefit of the building(s) you manage.

New for your facility: Smart Testing Technology

Most municipalities, OSHA, NFPA, IFC, SFPC, and corporate safety standards now require that a facility's Emergency Egress/Emergency System be tested on a regular (scheduled and documented) basis. These standards mandate a "Physical Test" of each exit sign, egress, lighting, and combination units. Complying with the NFPA Life Safety Code[7] demands that self-diagnostic emergency signs test the battery once a month for five minutes and once every six months for thirty minutes.

For a facility manager the presumed conclusion to these requirements is an increased labor and documentation process that may put a strain on your facility's budget. Ladders, labor, risk of injury, and lost time come to mind, but it does not have to be that way. Welcome to the 21st century! The lighting industry has the answer to your concerns, and your budget.

Along with standard exit and emergency egress fixtures, you can now find specialized fixtures that are available in harsh-environment and vandal-resistant housings with self-diagnostic and self-test features. Depending on the specification, a unit can come equipped with a sealed nickel-cadmium emergency battery pack with standard deep-cycle battery conditioning, self-test and self-diagnostic circuitry, remote laser-activated test switch, protected mechanical test switch and status indicator. This set of features will ensure the required 120 minutes of emergency operation (60 minutes with CAN option).

There are also new and interesting products in the architectural specification arena. The interior architectural and esthetic standard, the edge-lit LED exit, has been redesigned. New LED edge-lit exit fixtures are taking on a contemporary look, but packing a load of labor saving/life-safety features.

These units employ a two-state constant-current charger that maximizes battery life and automatically recharges after battery discharge. They offer self-diagnostic evaluation of the LED light source, AC-to-DC transfer, charging and battery condition, and they include solid-state electronic elements to eliminate the risk of electromechanical failures. A single-point microcomputer controls all of the electronic features, while the crystal oscillator timing system with watchdog protection ensures precision accuracy.

The units automatically switch brownout protection to emergency mode when supply voltage drops below 80% of nominal, and the single multi-chromatic LED indicator displays two-state charging, test activation, and three-state diagnostic status. The test switch provides manual activation of 30-second diagnostic testing for on-demand visual inspection, and self-diagnostic testing for five minutes every 30 days and for 30 minutes every six months.

This capability leads you even closer to your facility's "Save and Sustain" goals.

[7] http://www.nfpa.org/aboutthecodes/aboutthecodes.asp?docnum=101

Exterior Lighting

Facility managers often fall prey to the thought that cost-cutting measures pertaining to lighting can only be found inside the building, forgetting that the exterior lighting loads are often running at much higher wattages than inside and operate for many hours per night without constraint. Outdoor lighting can often be managed effectively under a variety of conditions simply by employing lighting controls and pursuing low-wattage alternatives.

In this section we will review areas of the facility where you can successfully implement a cost-cutting strategy that will help you "Save and Sustain" outside.

Parking Lots & Structures

Parking lots and parking structures have two things in common: people and vehicles. Now, before you wave-off over the simplicity of the conclusion, think about it for a moment.

The primary concern for people utilizing your parking lot or structure—whether coming or going, walking to or from their vehicles—Is safety. In conjunction with other resources, safety in large measure is accomplished with lighting. A well-lit parking facility engenders a feeling of comfort and safety. That "feeling" is what you want your clients, employees, vendors, and visitors to have each and every time the use your facility.

Vehicles, coming and going, are obviously "controlled" by people, and as such require that a parking facility be well-lighted for safe ingress and egress, parking, maneuvering in and around obstacles, and so on.

For many years now the answer to this need has been to "blast" the parking lot with light and call it a day, literally turning night into day, but the energy mandates now in place do not allow for that simple approach any more. As a result, facility managers are looking for other ways to ensure safety. At the preverbal fork in the road, there are two options available: controls and energy-efficient light sources.

Controls, as discussed in the "Interior" section earlier, are your first path to "Save and Sustain" in parking facilities. Exterior motion sensors, lighting control relay cabinets, dusk-to-dawn programmable software, time clocks, photocells—and the list goes on. As a focus area, controls will save you more than most measures; they are well worth paying attention to because of the speed with which your facility can realize a return on your investment.

Energy-efficient light fixtures that are integrating the cutting-edge lamp and ballast technology available (including pulse-start metal halide, induction, and LED) are at the higher end of initial cost, but over the long haul do not begin to compare to the money that can be wasted on "old" technology sources. As we suggested earlier, when you add the issues of lamp life, material and labor components, and relative overhead costs, you will pay yourself back many times over when you choose to invest in energy-efficient light fixtures.

Figure Five: Examples of Exterior LED Lighting[8]

Commercial LED units that go head-to-head against their HID counterparts are hot on the market these days. In one comparison study, a unit was identified that was uniquely styled with a contemporary one-piece pole/fixture design. This particular unit employs 48 LED diodes that produce illumination equivalent to a traditional 175w metal

[8]Photo courtesy of Tersen Lighting

halide lamp. In addition, it produces both symmetric and asymmetric light distributions similar to traditional Type III and V reflectors.

Placing a premium on maintenance concerns, the manufacturer of that unit has conveniently mounted the driver (power module) at the base of the tilt-down pole for easy installation and long-term maintenance.

Designed for modern corporate and distinctive commercial facilities, the unit offers a range of pole heights (8', 10', 12', 14') to meet the specific aesthetic and photometric needs of customers.

Traditional pole and head combinations that are recognized for their timeless design are now packing a myriad of energy-efficiency benefits into their classic styles, offering facility managers additional opportunities for "Save and Sustain."

These more conventional designs have also undergone a transformation. Lighting styles that are positioned for the roadway, municipal, multi-family residential, and light commercial segments, are now integrating LED technologies, and offering a "Save & Sustain" game plan as well.

These units make use of progressive thermal management techniques, prismatic borosilicate glass refractor assembly, and precision optical tooling that equate to higher lumens per watt – and that means more savings for your facility.

These units are unique in that they operate as a fully-functional holistic fixture assembly, and are capable of being utilized in "new" installations as well as "retrofit" scenarios. Do the math. Saving as much as 100 watts per fixture retrofitted is going to dramatically lower your energy usage dramatically.

Safety and Security

Lighting is a critical component of safe and secure facilities. It goes without saying that if your facility is dark or under-lit in areas of ingress and egress, your facility and its inhabitants are at serious risk. Risk, in today's defining terms, equates to physical and financial pain. Having good safety and security lighting is a great way to begin reducing risk.

Over the past two decades communities and consultants have come together, with the help of organizations such as the Illuminating Engineering Society of North America (IESNA)[9] and the International Dark-Sky Association,[10] to develop and implement guidelines and standards for lighting the outdoor environment.

Figure Six: Lighting for Safety[11]

[9] http://www.iesna.org

[10] http://www.darksky.org

[11] Photos courtesy of Kenall Lighting (http://www.kenall.com/)

When it comes to safety and security lighting, the majority of the budget has too often been allocated somewhere else. The result is that the lighting that was proposed and installed is often just a step away from the junkyard within a month of purchase. Fixtures that do not have vandal-resistant housings and lenses, quality gasket materials, and a warranty beyond one year should never be considered.

Safety and security is tough! Your light fixture selections should be too.

Today's safety and security lighting, like the entire lighting industry, is moving into a more architecturally pleasing and energy-efficient direction, taking wattage, styling, and warranty into account. Quality lighting fixtures today utilize induction, fluorescent, efficient HID, and LED sources, and they do so with a lifetime warranty.

An effective facility manager knows that if the light fixture cannot be easily vandalized, accidently damaged during site maintenance, or affected by adverse weather conditions, and it carries with it a "Peace of Mind" guarantee, it is worth spending money on because in the end it will reduce tomorrow's continued maintenance efforts, both physical and financial.

Signage & Corporate Branding

There is a basic rule of thumb for implementing signage and other forms of corporate branding: less is more! Too often those in the mix, whether it is the building manager, building owner, tenant CFO, designer, the signage company hired, or all of the above, go over the top with signage.

The thought is: "Whatever the allowable square footage of the parapet space and allowable watts are, use every bit of it-- get our money's worth!"

That may work in Las Vegas, but not in most communities. The problem with that philosophy is that corporate responsibility and professional consideration is forsaken for the "Wow!" factor, and in the end, signage and corporate branding are just an eye sore that works against the building. Marketing gurus may disagree, but history proves out the "less is more" strategy.

Having said that, there are many signage and branding elements that are well suited to flood and spot-light application, and it may surprise the marketing folks, but they do not have to "blast" the area with light to get the desired results.

Many studies indicate that, like moths, we are drawn to a visual differential of 10X (something that is ten times brighter than its background or context) this "moth effect" tells us that 10X is enough for a display to get the attention of the viewer and stand out among its surroundings. In other words: if your sign is in an area consisting of general nighttime illumination equal to 3 footcandles and you spot it to achieve a 30 footcandle reading at the face, you have done well, and may have even over-achieved.

This approach also speaks to the "Save and Sustain" plan of your facility, because fewer fixtures and lower-wattage fixtures equates to a significant energy savings—the tangible result of planning. A discussion of energy-efficient signage and corporate branding would not be complete without acknowledging the pioneering efforts of manufacturers that have strived to create new and inventive LED products as replacements for the higher-wattage alternatives.

Physical size, consumed wattage, and heat signature have all been reduced in this new breed of lighting solutions. At the same time, lumen output has increased, giving you a design advantage for both interior and exterior applications. You can "Save and Sustain" with fewer watts consumed and amplified lumen output.

Common Area & Landscape Lighting Savings

Your facility's common areas, as well as the hard and soft landscape zones, are signature pieces that speak to the commitment of the company to its employees, customers, the community at large—and, to a certain extent, the environment as well. These areas are likely the first "welcome" people will receive when they enter your facility.

A great deal of care and attention goes into the horticultural segments, pathway surface selections, irrigation specifications, and other parts of common area and landscape design; so much so that many times the lighting is the last thought or care. Sadly, that is when the "low bidder" comes in with all of the "low-cost answers," and installs what he had left over from the last job or just purchased at the local home improvement store. Later, you discover that many of the "low-cost answer" fixtures require constant re-lamping because they do not utilize energy-efficient, long-life lamps, or they have died all-too-soon; and some fixtures may also be cracked and rotting in the sun.

In the common areas and roadway you are also likely to find that the decorative pedestrian-scale lighting fixtures, installed with plastic lenses instead of a high-quality and long-life glass specification, are yellowed and cracking, and do not provide adequate—much less safe—Illumination. In a case like this, did the facility realize a savings at all? The obvious answer is "No."

Taking into account the additional labor, materials, risks, and general budget losses of repairing and eventually replacing sub-standard lighting, it never makes sense to lower the specification standards. Accept only the best for your facility, and it will pay you back in many ways.

The Facts

Common area and landscape lighting is important to the overall aesthetic, security, and efficient value proposition of each facility. Your facility is no different.

You can actually "Save and Sustain" by installing the correct type of landscape lighting, and thereby avoid the pitfalls of the other "options."

The leaders in the landscape market are now producing a number of low-wattage, long-life lamp sources, and, like the rest of the lighting industry, they are also incorporating LEDs. This practice is a windfall for facility managers. Whether you are replacing or buying new, the consumed wattage of an LED, fluorescent or other energy efficient lamp is likely to be a three- to five-times wattage savings over incandescent systems. Even if you are already using an energy-efficient lamp source, such as fluorescent, you will realize additional savings by adopting these newer technologies.

When you look at a landscape lighting system be sure to consider:

- energy-efficient lamping options;
- stainless steel transformer housings (for long life in the harsh environments of irrigation, rain, and snow);
- an extended warranty that includes replacement (the best manufacturers stand behind their products for many years beyond the sale); and
- factory representative support if there is a problem. Service like that does not come from a home improvement store that brags, "We are the cheapest in town."

Other considerations include the construction of the in-grade fixtures, the housing materials, their gasket strategy, the door assembly, cool lens technology for pedestrian areas, and how the fixtures address water penetration.

Rebates, Incentives, LEED & Tax Credits

Resolute facility managers focused on discovering "Save and Sustain" methods are a lot like blood-hounds. They "sniff out" the faintest hint of cost-cutting opportunities and seize the results that improve their facility's budget and function. If that describes your tenacity, then you want to make yourself aware of the many and varied program incentives that are available.

The Energy Policy Act of 2005 (Recently Extended to December 2013): Clearly the biggest news to hit the facility manager's desk in years, this program authorized a tax deduction for the owners of energy-efficient commercial buildings that is equal to the energy-efficient commercial building property expenditures made by taxpayers, subject to a cap.

The commercial buildings tax deduction provides key opportunities for businesses:

- Design new, or upgrade existing, facilities with efficient lighting that qualifies for the tax deduction.
- Realize long-term benefits resulting from reduced energy operating expenses.
- Benefit from improved lighting quality.
- Provide more lighting flexibility with bi-level controls[12]

A tax deduction up to $1.80/sf is available for buildings that achieve a 50% energy cost reduction compared to a standard reference building meeting ASHRAE/IESNA 90.1-2001 standards. System-specific deductions up to $0.60/sf are also available for interior lighting, HVAC, and building envelopes that achieve a 16¾% energy cost reduction compared to the standard reference building.

Interior lighting systems that have substantially lower power density than the lighting requirements for the energy standard are eligible for the system-specific deduction under the interim rules for interior lighting systems.

Deduction Power Density:

$0.30/sf 25% below ASHRAE/IESNA 90.1-2001 increasing up to $0.60/sf 40% below ASHRAE/IESNA 90.1-2001

Lighting systems that result in a power density reduction between 25% and 40% qualify for a deduction determined on a sliding scale between $0.30/sf and $0.60/sf.

Note: Warehouses must outperform the standard by 50% and qualify only for a $0.60/sf deduction.[13]

Utility Rebates and Incentives: It is vital to check into your local utilities, municipalities, and state-operated rebate programs. Incentives and rebates are often available for your facility if it meets square footage or KWH electricity usage guidelines. And rebates and incentives can frequently be combined. In other words, you may be able to claim your "lighting retrofit" for a local utility rebate and also receive tax credit incentives from the state, or the federal government for the same retrofit.

Related Programs

LEED® The Leadership in Energy and Environmental Design (LEED) Green Building Rating System™[14] encourages and accelerates global adoption of sustainable green building and development practices through the creation and implementation of universally understood and accepted tools and performance criteria.

LEED is a nationally accepted benchmark for the design, construction and operation of high performance green buildings. LEED gives building owners and operators the tools they need to have an immediate and measurable impact on their buildings' performance. LEED promotes a whole-building approach to sustainability by recognizing performance in five key areas of human and environmental health: sustainable site development, water savings, energy efficiency, materials selection and indoor environmental quality.[15]

[12] For more details on these examples, as well as solutions for other applications, go to:http://www.lithonia.com/taxdeduction.

[13] Treasury Department notices may be viewed and downloaded at: http://www.efficientbuildings.org

[14] http://www.usgbc.org/DisplayPage.aspx?CategoryID=19

[15] See Chapter Six for more details on reducing building energy.

Minimum Energy Performance. Each version requires some minimum level of energy performance as defined by a third-party standard such as ASHRAE 90.1 or the EPA Benchmarking Tool. For this prerequisite, lighting is one of the disciplines involved (usually also involving mechanical, envelope, and water service issues). Lighting is an important component of this prerequisite but lighting improvements alone will not provide compliance with it.

Optimize Energy Performance. Each version also allows for additional credits to be earned by out-performing the standard mentioned above by some specific percentage. The number of possible points and how to achieve them varies greatly version to version. Lighting is an important component of this prerequisite but will not solely provide compliance with it.

Light Controllability. All versions of LEED offer credits for providing varying levels of individual control over lighting and for ensuring that common areas also contain separate controls.

Light Pollution Reduction. This is one of only two credits totally dependent on lighting issues. The specific requirements and the number of possible points (0.5 to 1) vary between the various versions of LEED. In general, however, this credit aims to: (1) reduce light trespass onto neighboring properties; (2) improve nighttime visibility through glare reduction; and (3) reduce sky-glow to increase night sky access and to reduce developmental impact on nocturnal environments. Most of the versions, for this credit, contain requirements for both internal and the external lighting.

Mercury Content in Light Bulbs. LEED-EB has both a prerequisite and a credit (one point) for maintaining the mercury content of all mercury-containing light bulbs below a specified number of picograms per lumen hour, on weighted average, for all mercury-containing light bulbs acquired for the existing building and associated grounds.

References and Tips

The lighting industry is comprised of hundreds—perhaps a few thousand—quality lighting manufacturers vying for your attention and your facility's budget. Sadly, there are a sizeable number of manufacturers that do not put quality first, but instead are only seeking "the next sale." Illegitimate (or perhaps, at the very least, questionable) manufacturers generally survive for only a short time, and then morph into another brand name, disappear, or simply cease operations. Either way, the consumer—you and your facility—is left with highly unsatisfactory results. More often than not, an inferior product that under-performs carries a limited warranty or none at all; costs more to operate; carries with it the burden of increased maintenance effort and cost; or, in the worst case, is a threat to building integrity and the safety of the occupants and users of the facility.

In a recent on-line search for the term "Fluorescent Lighting," we found over 2,160,000 results. Manufacturers, retailers, on-line distributors, auction sites, and who-knows-who, want you to web-surf your way to a decision about your facility's lighting. Your search through the maze of national and international manufacturers in your efforts to determine which one of them is qualified to provide lighting fixtures, controls, and accessories for your facility—without the benefit of a skilled professional—can be daunting, if not outright dangerous!

Working with Lighting Professionals mitigates your risks and manages the rewards of installing quality lighting products.

Get to know the local lighting agents in your community. The agents/reps are generally very knowledgeable; and to a large extent represent a large number of quality lighting lines (manufacturers) across the industry spectrum. Manufacturers Representatives generally also offer a number of free services including point-by-point calculations, light fixture selection, budgetary pricing, bidding assistance, national account support, and they stay with the order from beginning to end. The "rep" is your best link to superior lighting products and controls. Many "reps" are under contract to represent as many as 50-75 different locally and internationally recognized brands, giving you the power to determine what is best for your facility.

For large facility projects, or projects that give particular attention to lighting systems, we recommend that a professional lighting designer be consulted. Lighting Designers and other lighting professionals understand the importance of continuing education, and those that hold Professional Certifications, CEUs, or LEUs (Lighting Education Units) are mandated to update their learning units regularly in order to maintain those Certifications. Professionals with the "LC" (Lighting Certified) appellation are required to maintain a level of continuing education that includes 12 CEUs/LEUs during each twelve-month period, and must re-certify every 36 months.

Lighting Organizations Geared to Help You

IESNA – Illuminating Engineering Society of North America: http://www.iesna.org

For over 100 years, the IESNA has been the world leader in the dissemination of technical information, research studies, educational courses, professional development and recognition, and the scientific development of Recommended Practices for the Lighting Professions. According to the Society, "The IES seeks to improve the lighted environment by bringing together those with lighting knowledge and by translating that knowledge into actions that benefit the public."

NCQLP – National Council on Qualifications for the Lighting Professional http://www.ncqlp.org

The NCQLP is another non-profit organization that could be a useful reference for you in your search for a lighting professional. The NCQLP was founded in 1991 to "Serve and protect the well-being of the public through effective and efficient lighting practice. Through a peer-review process, the NCQLP establishes the education, experience and examination requirements for baseline certification across the lighting professions."

A Few Words about Procurement

There is a misconception among many facility managers regarding the methods for purchasing lighting, lighting controls, accessories, and related electrical components. As a facility manager, one of your primary responsibilities is to manage costs within the maintenance cycle. With lighting, it is important to understand that you are not limited to purchasing your lighting products through the building's electrical contractor.

In fact, if you are able to procure the specified light fixtures through your electrical wholesale distributor, in-step with your new-found relationship with a local factory Rep, you may very easily realize a 10% to as much as a 30% savings over a standard contractor/contract purchase arrangement. Those are real dollars, real savings, and that is of real importance to your bottom-line—all while not having to sacrifice quality or the specifications required to implement it.

This savings can be accomplished in part because of the agreements and factory incentives that generally exist within the wholesale distribution structure—a structure that the contractor benefits from every day by purchasing at a wholesale level and then marking it up for sale to you. Bypass this step—purchase directly from a wholesale distributor—and we guarantee you will save money.

The one caveat to this method of purchasing is that you are then the direct-buy contact. You will be responsible for the coordination of purchase orders, shipping, on-site receipt and storage, and any warranty issues. It comes down to your level of interest in major cost savings….With a little work on your part; you can save a significant sum over time.

The Facility "Save & Sustain" Checklist

Conduct an energy use audit with a facilities consultant.

- Review your lamp and ballast use.
- Investigate low-wattage LED opportunities.
- Replace 3- and 4-lamp fixtures with new 2-lamp RT5 or RT8 units where applicable.
- Calculate the facility savings from re-lighting with Lithonia "ReLight" energry efficient remodel units
- Create an energy focus with decorative LED and low wattage fixtures.
- Install lighting controls throughout your facility for compound savings.
- Consider linear fluorescent hi/low bay fixtures versus HID.
- Conduct an emergency exit/egress analysis. Replace signs and fixtures as appropriate.
- Assess your parking lot for potential energy savings.
- Evaluate safety and security measures related to lighting.
- Appraise possible energy saving opportunities with your signage.
- Join the IESNA to stay up-to-date on the science of lighting and design.
- Examine local, state, and national rebates and tax incentives for installing energy-efficient lighting.

Selected Resources

Manufacturers:

Acuity Brands Lighting, Inc.: http://www.acuitybrands.com

Bruck Lighting Systems, Inc.: http://www.brucklighting.com

Energie Lighting LLC: http://www.energielighting.com

Gotham Lighting: http://www.gothamlighting.com

Holophane: http://www.holophane.com

Hydrel Lighting: http://www.hydrel.com

Kenall Manufacturing Co.: http://www.kenall.com

LC&D (Lighting Control & Design): http://www.lightingcontrols.com

Lithonia lighting: http://www.lithonia.com

Peerless Lighting: http://www.peerless-lighting.com

Precision Architectural Lighting (PAL): http://www.pal-lighting.com

Renaissance Lighting: http://www.renaissancelighting.com

Reyk Lighting, Inc.: http://www.reyklighting.com

Sensor Switch, Inc.: http://www.sensorswitch.com

Tersen: http://www.tersenlighting.com

Vista Professional Outdoor Lighting: http://www.vistapro.com

Selected Architectural Firms:

T.S. Voelker Architecture: http://www.tsvarchitecture.com

HKS, Inc.: http://www.hksinc.com

Selected Electrical Engineer & M/E/P Sustainability Consultant:

P2S Engineering, Inc.: http://www.p2seng.com

Selected Lighting Consultant:

Fox + Fox Design LLC: http://www.foxandfoxdesign.com

Selected Intellectual Property – Product Designers:

Pinpoint Innovation,® Inc.: http://www.pinpointinnovation.com

Still with us? There you have it. Just about everything you need to know about lighting—and then some—but you are now a better-informed facilities manager armed with several very specific things you can to do—in Shad Arnold's phrase, "Save and Sustain." God help the next electrician you run into!

Now that we have energy and lighting under control, there is one more chapter of nitty-gritty we need to cover: maintenance. Yep, that thing everybody does everyday but nobody wants to talk about it. You know deep down that things just doesn't keep humming along like a fine Swiss watch without some tweaking, cleaning, and oiling. We turn to that topic now, and then in the closing chapters we'll bring you back up to the surface.

ABOUT THE AUTHOR

Shad Arnold, LC, CLC, LS
Performance Lighting Systems

Shad Arnold, LC, CLC, LS is an accomplished and respected leader in the Lighting Industry, and has benefited from over 20 years of real-world experience in Design/Build, Contract, Service, and Sales. He has served as the Director & Senior Designer of an award winning Lighting Design & Consultation group, as the Director of Business Development for two internationally recognized Lighting Manufacturers, and as a Specification Sales Manager for Lighting Manufacturer's Representative Agencies. He is also a founding partner in two California Corporations specializing in developing and marketing intellectual property, designing cutting-edge lighting products, manufacturing, consulting, and international distribution.

As a designer, Shad's projects garnered a number of local and international awards, as well as a cover photo and story in A|L (Architectural Lighting) magazine. His work found its way into lead articles, interviews, and numerous subject text in LD+A (Lighting Design + Application) magazine, GE Lighting News, Irvine Chamber of Commerce – Business Connection, and Church Business magazine. Shad currently serves as the Chairman of the Illumination Design Awards on the Orange County Board of Managers of the IESNA (Illuminating Engineering Society of North America).

Shad has written for EC&M (Electrical Design, Construction & Maintenance) magazine, The Competitive Advantage magazine, Systems Contractor magazine, Church Business magazine, and Security Access & Controls magazine.

Shad may be reached at shad@shad4light.com

8 Chapter Eight
Thinking Outside of the Bucket

This is the last of our three "deep dive" chapters that go down into the real nitty-gritty of maintaining operations in today's (and tomorrow's) office facilities. We're loading you up on very, very practical stuff that you can start doing on Monday morning.

Here, Jennifer Corbett-Shramo takes a look at what is usually invisible to most of us. Few of us (except for you dedicated facility managers) think about what happens after most of the staff makes a hasty exit for the parking lot at 5 PM. Well, in truth (as you well know) there's a lot going on in your building after 5. And a lot of that can be improved.

And it doesn't cost a lot of money; it just takes more smarts. So here's how to get smart about getting down and dirty! And never, never forget, the money you save today can be invested for tomorrow.

Jennifer Corbett-Shramo
IFMA Foundation Trustee

The Idea in Brief

The current commercial cleaning model is broken. The need for innovation, change, responsible contracting, and "thinking outside of the bucket" is at its peak in the arena of commercial cleaning. For years the managers of commercial office buildings have been using their custodial budget, which can represent as much as 27% of the entire operating budget,[1] as the resource for operational cost reductions without an understanding of the impact on the building envelope.

In addition to pressure for continuous cost reductions, there are many other issues that have faced the cleaning industry in recent years. Among them are:

- depressed wages;
- high turnover;
- anonymity of the laborer;
- work schedules;
- energy waste; and
- trash burdens on landfills.

The challenge is not that most cleaning operators aren't willing to cooperate with the economic and the environmental issues that are ever-present today; they are. Their willingness to cooperate is evident by the industry's movement towards green. When we consider the "triple bottom line" approach to green cleaning practices, it seems that most people focus on the planet and the profit so often that the third component, the people part, is largely forgotten. If we really want to consider a new approach to reducing operating costs while simultaneously improving quality, we must focus on the fact that humans clean buildings. Unless we are willing to "Cut it Out" when we continually view custodial staff as the "first resort" for reducing costs, and face up to the fact that social responsibility and innovative processes must be integrated into changing the way we clean buildings, we will end up with facilities that may not be healthy to work in while we "bottom out" with reduced costs and ineffective operations.

[1] Research Report #32, Operations and Maintenance Benchmarks, International Facility Management Association, Page 64. © 2009, ISBN 1-883176-79-4

In this chapter we will address leaner and greener cleaning processes that will reap quick and sustainable cost-effective results in combination with socially responsible operating systems. The processes described in this chapter are not conceptual or theoretical in nature; they are realistic programs that produce realistic results.

Executive Summary

This chapter will highlight three critical areas in commercial cleaning that can directly impact your operating costs:

1. Cleaning Operation System Design: creating alternative staffing models

2. Daylight Cleaning: creating alternative work schedules

3. Recycling: creating alternative waste handling processes

In each section that follows we will describe the tools that you can deploy to scrutinize your current cleaning operations to generate both cost reductions and more sustainable custodial processes.

System Design with Green Undertones

Designing a well-thought-out system for cleaning your facility is the cornerstone of all janitorial programs. Your customized system will be at the heart of determining the most cost-effective and sustainable methods of maintaining your janitorial budget. This section will provide you with enough general information on custodial operations and infrastructure to ensure that you are making informed decisions about your custodial spend. Further, it can clearly be noted that, regardless of the ultimate operating plan and budget for cleaning your facility, incorporating environmentally preferable chemicals, equipment and systems is cost-neutral.

Step One: Work Loading

We define "Work Loading" as the mapping process for designing a cleaning system. When you are preparing a work loading process you will need to take into consideration the following five components:

1. The area types that need to be cleaned. While determining the total cleanable square footage you may find there are many different types of space utilization; in turn you will want to develop different specifications for each of them. Examples of these differing areas include:

    - common Areas
    - office areas
    - manufacturing areas
    - lab areas
    - kitchens, coffee stations, galleys
    - restrooms
    - Conference Rooms
    - Computer Rooms

2. Once you have determined all the areas to be cleaned you will need to determine the total cleanable square footage or cleanable area.

> *"Cleanable Area is defined as the area that is cleaned by the custodial staff. It typically includes the surface areas of floors, restrooms, carpets, lobbies, and other areas in the facility that require cleaning in order to maintain sanitary conditions and a defined appearance level. It is important to note that it does not necessarily bear a relationship to other measures of floor area such as the "usable area," "total interior area," or "rentable area." Accurately determining the number of cleanable square feet that will be serviced is the foundation for your work loading and staffing calculations."*[2]

[2]David Frank and James Peduto, Esq., CBSE, Smart Staffing, Bidding & Estimating Guidebook. Illinois, ISSA 2008.

Step Two: Specifications, Frequency and Productivity

Specifications or scope of work development is the next key element in designing a cost-effective cleaning system. By understanding completely the areas that you want to have cleaned, the tasks assigned, and the minimum frequency in those areas, you can begin to grasp the impact a well-defined scope can have on your overall costs.

Illustration of financial impact using specification design. 100,000 Square Foot Facility

A 100,000 square-foot facility has "Tenant A." Tenant A has carpeted office areas of 64,000 square feet. The 64,000 square feet are composed of 40,000 square feet of common traffic areas and 24,000 square feet of office and cube areas. Specifying the frequency and the area of Tenant A's carpeted space to be vacuumed indicates there is significant potential for cost reduction.

Option A (Traditional Full Service). Vacuum all carpeted areas five times a week.

- Vacuuming with an electric backpack vacuum can be accomplished at a productivity rate of 8,000 square feet per hour,[3] or eight hours per occurrence in this office building.
- Labor for this task would be 8 hours per day times 5 days per week equaling 40 hours of vacuuming in the office areas of Tenant A per week.

Option B (Modified Service). Vacuum the carpeted common traffic areas five times per week and the office and cube areas 3 times per week.

- Vacuuming with an electric backpack vacuum can be accomplished at a productivity rate of 8,000 square feet per hour or eight hours per occurrence in this office building
- Labor for this task would be eight hours per day times three days per week (24 hours of vacuuming) in the entire office area plus five hours per day two times per week (ten hours of vacuuming). This option totals 34 hours of vacuuming per week in Tenant A space.

By adopting Option B you can reduce the cost of vacuuming in the Tenant A space by six hours per week; assuming 4.3 weeks in a month you will reduce total cleaning time by 25.8 hours per month. Using a sample loaded custodial rate of $15.00 per hour, this slight reduction can generate $387 per month in savings, or $4644 annually.

This simple illustration of specification, frequency, and productivity clearly illustrates that by thoroughly understanding the work-loading process you as a Facility Manager can significantly affect the cost of cleaning a facility. Further, your cost reductions can have very specific outcomes.

These unambiguous results are great for pinpointing savings opportunities prior to implementation; they can be used as "options" when building your overall facility savings plan.

Figure One contains a sampling of system redesign analyses utilizing varying tasks, frequencies and pace per square foot per hour according to ISSA[4] standards for a 100,000 sq. ft. facility.

[3]The Official ISSA 447 Cleaning Times Calculator, International Sanitary Supply Association, Inc. (Illinois: ISSA 2003)

[4]The Official ISSA 447 Cleaning Times Calculator, International Sanitary Supply Association, Inc. (Illinois: ISSA 2003)

Figure One - An Example of a System Redesign

Square Footage Summary - 100,000 ft.^{2} Cleanable 70,000 ft.^{2} Carpeted (64,000 office carpet and 6,000 common area carpet) & 30,000 ft.^{2} vinyl tile											
Task	Pace/Hr in square feet	Hours in Example Building visit	Example A (5x/wk) Days/Mon	Example B (3x/wk) Days/Mon	Sample loaded labor rate	Example A Monthly Cost	Example B Monthly Cost	Example A Annual Cost	Example B Annual Cost	$ Savings Difference Annually	% Savings Difference Annually
Vacuum w/ Back Pack Vac	8,000	8.75	21.75	13	$12.00	$2,284	$1,365	$27,405	$16,380	$11,025	40%
Vacuum w/ a 12" Upright Vac	2,239	31.25	21.75	13	$12.00	$8,156	$4,875	$97,875	$58,500	$39,375	40%
Dust w/ Microfiber Cloth	5000	20	21.75	13	$12.00	$5,220	$3,120	$62,640	$37,440	$25,200	40%
Task	Pace/Hr in square feet	Hours in Example Building visit	Example C (12 times per year)	Example D (6 times per year)	Sample loaded labor rate	Example C Monthly Cost	Example D Monthly Cost	Example C Annual Cost	Example D Annual Cost	$ Savings Difference Annually	% Savings Difference Annually
Scrub w/ 21" machine	3531	8.5	12	6	$15.00	$128	$128	$1,530	$765	$765	50%
Wet Vacuum	2273	13	12	6	$15.00	$195	$195	$2,340	$1,170	$1,170	50%
Apply floor finish using mop	2273	13	12	6	$15.00	$195	$195	$2,340	$1,170	$1,170	50%

Daylight Cleaning Operations

Daytime cleaning operations epitomize the principles of the "triple bottom line." When defining the sustainability of a green product, process or practice, the triple bottom line emphasizes achieving balanced results for People, Planet, and Profit while making decisions for the built environment. Day cleaning not only addresses each of these components, but it can deliver clear and measureable results. In this next section we will take you through this innovative and verified approach to sustainable cleaning practices.

It is amazing to consider that a cleaning operation that was initially practiced over 70 years ago, prior to the Great Depression, could actually be resurrected and viewed by many today as a best practice. Simply put, the new "old" system in cleaning is the performance of custodial operations during daylight hours.

Daylight cleaning is the next generation in the line of green cleaning processes that have evolved out of the stressed cleaning industry. This revolutionary rebirth in approach to cleaning positively affects:

- Energy Savings
- Tenant Satisfaction
- Tenant Security
- Environmental Issues
- Socially Responsible Contracting
- Cost Reductions

> *"This will be first time in 20 years of cleaning buildings that I will be home with my family at dinnertime."*
>
> Lead Custodian
> Fluor Corporation
> 2009

Energy Savings

Daylight cleaning is performed during the times of day that the facility is normally lit; generally between the hours of 7 AM and 8 PM. This shift in hours of the cleaning operation dramatically reduces the amount of energy required to light the building—even in the most energy-efficient facilities. With the implementation of day cleaning a facility can reduce its energy costs by a minimum of four percent and upwards of eight percent of the total electricity costs, which typically average 25% of the total operating budget.[5]

In the BOMI Design and Operations and Maintenance Course, Daylight Cleaning is deemed as a best practice; it can be produce up to an 8% reduction in energy operating costs in a building.[6] This consistency in energy savings when cleaning is performed during normal occupancy hours has been validated throughout the United States and Canada in many different types of properties.

The amount of energy savings you can expect depends on the type of facility and the lighting that is used in the building. Clearly, buildings with more antiquated fixtures such as T12's will reap larger savings. Regardless of bulb type, if you turn out lights you will reduce energy costs. The beauty of implementing an energy savings program with daylight cleaning is that your rewards are virtually instantaneous; you reduce energy usage, and in turn reduce energy costs.

Tenant Satisfaction

The occupants of facilities that are cleaned during daylight hours report a higher level of satisfaction with the cleaners and their work product. The increase in satisfaction may be a result of the fact the employees/tenants can now visualize the cleaning process and empathize more with the crews. Further, due to the fact that the crews are present, end users can make requests of the custodians in real time and have their issues addressed on the spot. That in turn mitigates the need for the tenant to place a complaint with the building management and then have to wait for the whole complaint process to unfold before the issue is resolved.

Another factor that leads to increased levels of tenant satisfaction with daytime cleaning is their own personal perception of cleanliness. When the "tenant can actually see the custodian working in their space they perceive that their space is cleaner."[7] This perception of a building's improved cleanliness and reduced energy generally mitigates any inconveniences tenants might experience because of the presence of the cleaners.

Another benefit develops when the tenants grow accustomed to having the cleaners in their workspace and develop relationships with them: cooperative cleaning. Because they see it being done employees understand the amount of cleaning work that has to be done, and they themselves generally keep their office areas tidier. For example, they will be more apt to pick up the paper that missed the trash can or set their unfinished coffee cup in the trash, versus tossing it in and causing splashes on the wall.

[5]Research Report #32, Operations and Maintenance Benchmarks, International Facility Management Association, Page 64. © 2009, ISBN 1-883176-79-4

[6]Energy Management in Commercial Real Estate (BOMI – RPA Mandatory Course.) "The Design, Operations and Maintenance," Part II (Chapter 8) Energy Management in Commercial Real Estate.

[7]Reduce, Reuse, Reinvent: How to Revitalize Your Janitorial Procedures Using Green Techniques, BOMA International, 2009.

Cleaning Considerations: Smart Scheduling Offers Solutions

In 2001, Craig Sheehy, Director of Property Management at the Joe Serna Jr. California Environmental Protection Agency headquarters, discovered several benefits to changing the custodial staff's work schedule from nighttime to daytime hours.

- First, it significantly reduced energy use because workers no longer needed additional lighting to clean. "As a result of this change, we have not only reduced energy consumption by eight percent but also incurred utility savings of $100,000 annually," he says.
- Second, the change reduced the complaints about cleaning. Building occupants now can talk directly to the custodial staff regarding their concerns.
- "Now that the employees see our custodial staff working, our complaints have dropped more than 70%," he says. This change equals a savings of $110,000 in labor hours.
- "Furthermore, since the working hours are ending earlier, for the first time in their careers, (the custodial workers) are able to put their children to bed at night," he says. "This has reduced our staff turnover significantly and eliminated continuous training."[8]

Tenant and Custodian Security

Cleaning during the daytime has also had a direct impact on the security issues that often occur in office buildings. There is a common belief regarding commercial cleaning that janitors frequently take the tenants' personal items at night when no one else is present. This presumption all but disappears when the cleaning is performed in the daytime. As stated earlier, the perception of the crews and their work product significantly changes when employees can see the work being done and the people doing the work.

An ancillary benefit of daytime cleaning is the safety of the crews during the night hours. By completing their duties in the buildings by 8 PM instead of the morning hours (often as late as 2:30 AM), they do not have travel to or from work in the wee hours of night. Further, they can be home with their family in the evenings—which for many of them has never been possible before.

[8]LE Renee Gryzkewicz ED-E., It Pays To Be Green. Trade Press (1995-2009) Facilitiesnet, July 2005

Environmental Benefits

Beyond the environmental benefit of reduced energy usage and in turn the reduced production of green house gasses (GHG's) associated with energy generation, daytime cleaning also has a positive impact on migratory birds. The number one cause of deaths among migratory birds in North America is large illuminated buildings at night in congested cities; the birds are attracted to the light and collide with the glass in the maze of buildings. According to the Fatal Light Awareness Program (FLAP), in North America at least 100 million birds—mostly low-flying songbirds—die each year in collisions with man-made structures. Turning off lights in large commercial structures at night will reduce the birds' attraction to those buildings and hence produce a decrease in migratory bird kills.[9]

Daytime Cleaning is Socially Responsible

Daylight cleaning represents an operational opportunity to demonstrate to the employees and/or the tenants of your facility the social impact of sustainable practices. So far in this chapter the social impact has been focused largely on the perception of the custodians' performance and the convenience that the tenants receive from immediate responses to their cleaning requests.

What we have not mentioned is the dramatic improvement in the quality of life for the custodial crews. This social equity component of daytime cleaning is remarkable; individuals who were essentially anonymous and stereotyped are now seen as real contributors to the success of the business. They can play an active part in keeping the workplace clean and safe for those who are present during the workday, and they are afforded the respect due for their contributions. They are now part of the team!

At first glance this benefit could be viewed as trite or insignificant, but as the popularity of daytime cleaning grows there are more and more examples of the

[9]"Our Vanishing Night," National Geographic, November 2008, page 118.

significance of "real people" cleaning in the daytime. When people are recognized for their contributions they take more pride in their work, absenteeism decreases, as does voluntary turnover. Consequently, the reduced turnover and stability of the crews positively affects the overall work process - when the process is performed more regularly and with more pride the overall product is more consistent and of higher quality.

The Model Green Lease Advocates for Daytime Cleaning

In general, when moving from a night operation to a day operation, daytime cleaning is an essential element of the Model Green Lease. Preliminary engineering estimates show that buildings adopting the Model Green Lease with the recommended standards can cut energy use by thirty to fifty percent.

When properly implemented daytime cleaning offers a number of direct and indirect cost savings. Energy savings of six to ten percent are common. Other benefits include improved building security, reductions in janitorial staff turnover, and significantly fewer complaints from occupants. Just responding to a complaint can cost between $50 and $70 per incident—money that you could put to better use elsewhere in your facility.

B. Alan Whitson, RPA
President
Corporate Realty,
Design & Management Institute
July 2009

Day Light Cleaning "Insures" Time and Money Savings

Over the past 15 years, Steven Spencer, Facilities Specialist for State Farm Insurance Corporate Headquarters, has continually developed innovative ways to reduce costs at the State Farm facilities. One of the most important changes was in custodial care with the shift from night time cleaning to day time cleaning.

In 2000, State Farm began transitioning to day cleaning. Today, with over 11 million square feet in 38 large facilities, State Farm realizes an 8-10% cumulative savings with daytime cleaning.

- The largest cost savings immediately identified were in the reduction of electricity costs. Large savings were also seen with the elimination in the duplication of services with Day Porters vs. Night cleaners no longer needed. Along those same lines is the elimination of supervision requirements for both the day and night shifts.

- The purchase of different tools and equipment to accommodate day cleaning also allowed for the increase in productivity and the decrease in labor hours to perform such tasks as vacuuming of main traffic areas. The initial cost was paid back within the first year and annual savings in the thousands are now being realized.

- Other less definable savings areas are seen in the reduction of security calls relating to theft, the reduction of training costs due to turnover and likewise the reduction of security costs relating to processing new cleaners. Also employees were able to see the cleaning being performed, which spawned a greater appreciation of the cleaning crew and the environment in which they worked. This appreciation helped to reduce the soiling by employees.

- Other benefits driven by day cleaning related to the use of green chemicals and lower decibel equipment which are safer to the user and the occupants.

Deborah Stonehouse
Director of Operations,
DCS Global Enterprise USA
August 2009

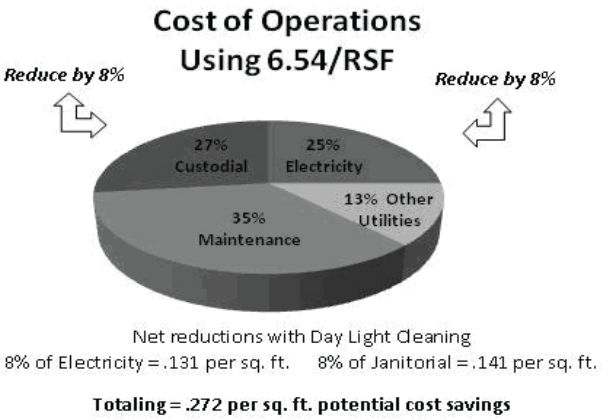
Cost Reductions

In general there are cost reductions when a company converts from nighttime to daytime cleaning operations. The reasons for these savings include:

- the lights are turned off at night, and the cost of energy is reduced;
- the crews are more diligent when working in plain view of the tenants, and they are more productive, thus requiring less time to accomplish the same tasks;
- The crews do not have to clean already-clean areas just to keep busy;
- The tenants understand that when they have signaled to the crew that they are busy that it may not be until the next day that their areas are going to be cleaned, contributing to maximum efficiency and pace for the cleaning;
- The crews are organized as team cleaning specialists so they know how to do their specific tasks, and they can do them efficiently with the proper training and tools; and
- The green tools, products, and processes that are typically used during day cleaning are more productive in terms of square footage covered than the traditional tools that generally used in nighttime cleaning.

When moving from a night operation to a day operation with green cleaning chemicals, equipment, and custodial specialists, the average facility is able to reduce its cleaning costs between seven and twelve percent. The amount depends largely on the system design for night cleaning in contrast with the system design for day cleaning. To refer back to an earlier portion of this chapter, a well-thought-out set of specifications and cleaning frequencies will drive the most effective cost reduction strategies.

Figure Two: Building Operating Cost of Distribution with Daylight Cleaning Potential Reductions[10]



Implementing Daytime Cleaning

The most difficult aspect of converting from a traditional night operation to an innovative fresh day operation is dealing with organizational and cultural change. A wise person once said that there are four phases of change: surprise; anger; acceptance; and celebration. Francis Bacon said, "Knowledge is power." When combining those two statements we find that by educating the end user, the custodian, and the executives in your company, you will be able to mitigate both the anger and the surprise of the new program. You will also be able answer challenging questions such as, "Are they going to vacuum while I am working?" with grace and style. Then, when the employees realize that the janitors really are wonderful people, the acceptance phase will set into your program. Finally, when the reduced energy and custodial bills are delivered and you can show them to your senior executives that last phase of celebration will take place!

10 Operations and Maintenance Benchmarks Research Report #32. International Facility Management Association© 2009, ISBN 1-883176-79-4, Page 64.

"Plan Twice and Implement Once!"

- Communicate your intentions to the decision makers
- Study your energy bills
- Document your current days and hours of cleaning operations
- Ask your supervisor or contractor to provide you a current staffing plan
- Ask your contractor for their experience with day cleaning
- Seek professionals that can guide you through the process
- Review your scope of work and analyze and compare it against day cleaning
- Communicate your results with the decision makers again
- Educate the employees and the cleaning crew on your plans and findings
- Train or have your contractor train the cleaning crew on the new processes
- Set a target start date
- Start
- Monitor and measure
- Communicate and celebrate the success of the program

Daytime cleaning has been successfully implemented for millions of square feet across North America. When done properly the process can reap remarkable and lasting cost reductions in energy and custodial activities. The investment in starting a daytime program is virtually negligible and the benefits are immediate.

"At State Farm Insurance Company we have been able to reduce our energy costs in our 38 largest facilities, which encompass nearly eleven million square feet, by an average of eight percent."

Steve Spencer
Facilities Specialist
State Farm Insurance August 2009

JohnsonDiversey Incorporated: A Case Study

Background

JohnsonDiversey Incorporated (JDI) owns and operates a world-class, three-story mixed-use facility that was constructed in 1997; it serves as the global headquarters for the company. The building consists of 277,440 square feet of space, of which 70% is office space and 30% is research laboratories. The building was designed based on green-building principles, including high-energy efficiency, extensive use of natural lighting, and individual control of workspace environments.

Because the facility was originally built with sustainability in mind, applying LEED-EB to the building was primarily a matter of fine-tuning the building's operations practices and improving the documentation of already-existing sustainable practices. The JohnsonDiversey Global Headquarters was certified LEED-EB Gold in March, 2004; it is undergoing recertification in 2009.

Sustainability-driven initiatives are an integral part of the facility management strategy as evidenced by original the drive for LEED certification and then the 2009 recertification initiative. Given that commitment, the innovative operational approach to daytime cleaning was a natural for the facility.

On March 1, 2009, the custodial operations of the building were converted to the daylight cleaning process. This cultural shift began after thoughtful research, thorough retraining, and comprehensive employee communications were completed. In order to validate the initiative the JDI facility department tracked the 2009 custodial spend and the energy usage in comparison to the identical six months of 2008.

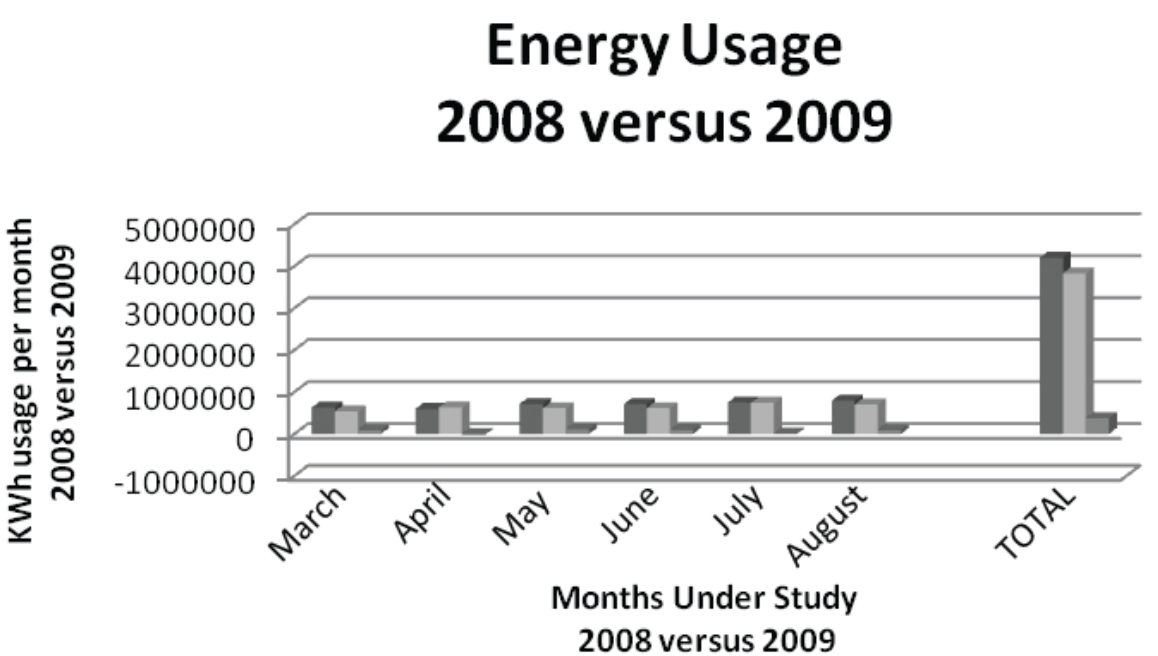
Results of Energy Analysis

The facility Department at JDI has actually tracked the building's energy usage for a six-month period. This period of time includes the startup phase and adjustments that were made as the program was launched. The energy savings are trending at 5.64%, or an annual savings of $35,178! The kilowatt-per-hour monthly consumption has dropped by an average of 62,888 KWh, which equates to a reduction of 754,652 KWh annually.

Results of the Custodial Spend Analysis

By conducting a system redesign of the janitorial operation and going to daylight cleaning JDI was able to reduce its custodial spending significantly. The savings came in two waves; the first wave was driven by the initial conversion to daylight cleaning. The second savings opportunity then followed three months later with a further reduction in actual labor hours. The JDI facility team initially found that as the former night staff began performing day janitorial work there were a number of task redundancies with the existing day staff; eliminating those redundancies had driven the original savings. As the program was refined over the next several months JDI was able to reduce its labor costs because of the higher efficiencies achieved by the cleaning crew when it was working in the presence of the other company employees.

Figure Three: Energy Usage – 2008 versus 2009



The overall savings were remarkable. The daylight operation is now saving JDI over 40% of its custodial spending over the previous year. The savings achieved by mid-summer 2009 equates to $164,303 annually.]

Successes of the Program

- Lower-cost cleaning bill due to right-sized staff to meet cleaning specifications
- Decreased light pollution to the night sky
- Fewer bird kills associated with birds trying to fly through lit windows at night
- Significantly fewer trash bags used, due to a change in the cleaning process (source reduction)
- Reduced carbon emissions from lower energy use
- Reduced energy bills
- Improved security
- Greater interaction between occupants and cleaning staff, leading to increased communication and understanding.
- Retention of cleaning staff with more desirable work hours during the daytime.
- Challenges in the Program
- Adjustment of the Spanish-speaking janitorial workforce to a predominantly English-speaking population in the facility during daytime hours
- Adaptation of the housekeeping staff to increased awareness of their presence by daytime building occupants (management and staff); housekeeping employees must overcome fear of being watched.
- Housekeeping staff acceptance and understanding that some things don't have to be done just for the sake of routine; rather the cleaning specification is outcome-based.

Conclusions

The installation of daylight cleaning at the JohnsonDiversey Global Headquarters was a bold yet remarkable operational change. The energy savings were significant even though relatively efficient systems had already been in place. The considerable custodial savings were also a major financial benefit that exceeded the expectations of the facility department. Overall, converting from night cleaning operations to daylight cleaning has had a positive effect on all JDI stakeholders.

Recycling[11]

Recycling can be both an environmental and a financial benefit to your company. A robust recycling program can enhance your company's reputation, build employee enthusiasm, and in many cases actually generate revenue. This section outlines some implementation techniques and strategic questions your company may want to consider in beginning a new program or revising an existing one.

SBM Site Services, a facility maintenance and janitorial service provider for more than 27 years, has developed a successful waste management program that has supported its clients' sustainability goals for 17 years. In 2008, SBM Site Services handled more than 248 million pounds of recyclables, diverted an average 90.2 percent of waste from landfills, and saved its sustainability customers more than $18 million.

Key to SBM's program success was the development of waste management processes, tracking methodologies, Key Performance Indicators (KPIs), and a cost-benefit analysis. These quality metrics and measurements provide SBM's sustainability team with the necessary tools to maximize diversion and program benefits for its clients.

Establishing an environmental program for customers is a highly feasible task given the appropriate tools and knowledge. SBM has developed a clear outline for program start-up and support for common administrative locations. If your organization is open to a waste management program, consider the following factors when evaluating program needs.

[11]This section was written by Sue Beets of SBM Site Services

Vendor Selection

Step one in this process is to identify local recycling resources. By reaching out to your current waste management company, as well as utilizing online search engines and directories, you can quickly identify vendors that handle the materials you want to recycle.

Most waste management vendors specialize in single commodities such as metals, paper, electronics, plastics, etc. It is highly desirable to diversify your service provider portfolio in order to ensure that you're not relying on one vendor for all services. In addition, if your organization's procurement policies require it, you may need to perform a formal RFP with a competitive bid process.

When investigating potential vendors, be sure to ask these vital questions:

- What materials can they recycle? At a minimum you should be able to recycle paper (mixed paper, food boxes, and cardboard—basically anything that tears), aluminum cans, and plastic bottles. Other potentially recyclable materials include metals, carpet, ceiling tiles, food waste composting, and landscape waste.
- Can the service vendor recommend outlets for hard-to-recycle items such as electronics?
- Can you reduce trash collection and add recycling at no cost?
- What will the outside recycling containers look like? Will they be clean and well-labeled?

Program Cost (Equipment and Supplies)

Before selecting vendors, identify the total monthly cost for the program. Keep in mind that selecting multiple vendors is often beneficial for identifying market trends and receiving competitive pricing.

Now that you have identified what materials you will be recycling and you've identified available vendors, evaluate the supply and equipment costs necessary to roll out the new program.

Consider which areas to supply recycle containers to. Should you focus only on shared or "common" areas such as printer/copier stations and break stations? Or should you also target conference rooms and desk-side recycling? Keep in mind that you will get the best Return on Investment (ROI) and increased diversion by fully supporting the entire facility with recycle containers.

Obtaining recycle containers is relatively simple. First, talk with your vendors to determine if they have containers they can supply. Also, inquire with the janitorial provider to determine if it is able to leverage vendor connections to provide pricing on a waste management solution, or if it can help you find competitive pricing for the containers.

While considering the cost of these supplies, determine if any labels or signage will be needed for the containers. Labels should clearly identify what is recyclable in the bin it is attached to. It should be eye catching, short, and to the point and include a phone number for any questions end users may have.

Also, evaluate the back-end processes and equipment you are currently using to determine the best fit for your program. Each site has unique requirements, conditions, and material flow that will help to determine your best equipment options. Should you use a 40-yard roll-off, or "open-top"? Should you rent or purchase a compactor? What bins will work best for your custodians for collecting recyclables from the site efficiently? Finding the right options for your site will ultimately affect diversion rates as well as the bottom line.

Education

When planning for the implementation of a new recycling program, it is important to keep in mind that the building "residents" play a key role in ensuring program success. Education is the cornerstone to end-user participation in your Solid Waste Program; it should begin well before the program launch.

Place posters around the site announcing the new program with a general outline of changes, and identify the benefits to the company. This information will help establish the culture necessary for program success; and it should be updated on an ongoing basis to keep the message fresh.

Appropriate information and education will inform building employees about the program, its goals, and how they can contribute to the program's success. This effort helps to promote higher waste diversion rates and supports site sustainability, while at the same time improving program revenue by generating higher volumes of recyclables.

Cafeteria or courtyard events for Earth Day, America Recycles Day, or other local or national educational events can also be a fun and engaging way to inform employees about the program

Cost/Benefit

At this point you will have identified and contacted vendors, determined supplies and equipment needs, and documented any additional costs associated with planned education, and any investment costs for establishing the program. These efforts, however, are only half of the picture; they don't include your strongest selling point: cost savings and future cost avoidance.

Cost is always a primary factor in determining the success of a new or existing program. Why spend money to recycle when you can simply throw it in the trash? Wouldn't trash be cheaper? Will your custodial company charge you more to recycle or will the new approach be cost-neutral? Can you adjust the frequency of the trash to include recycle collection? You need answers to these questions and others; and with the proper tracking in place, identifying the cost impact can demonstrate the true cost or value of your program.

Take all factors into account. Include the cost for the collection of the materials, the cost for processing materials (i.e. on-site sorting, equipment operation, preparing for shipment), landfill fees, equipment and supply costs, any revenue generated, any reuse savings, and landfill cost avoidance.

Finally, compare the scenarios, including in particular the cost of doing nothing new. A direct comparison can present a unique and often eye-opening picture of your program. What would it cost if all waste materials were sent to the landfill? How many more compactor pulls would be needed? What is the local landfill fee, and how much more would you spend on that bill versus making money back on your recycled cardboard, for example? Answering these questions before they are asked can be invaluable in proving your program's worth.

Composing the Proposal

As you create a proposal for the new recycling program, account for all the factors mentioned above. The proposal should include a brief overview of the program including initial cost, ROI, and a synopsis of both the environmental benefits and how those benefits will be good for the company.

From there, you should outline specific program needs, detailing equipment, supplies (including educational supplies), labor, and all associated costs. Next, illustrate the cost/benefit of the program by detailing the landfill cost

avoidance and revenue generation opportunities. Based on estimated revenue and costs provided by your vendor, you should be able to determine an ROI and the length of the payback.[12]

Finally, seek permission and buy-in to implement your program. Once you have approval, you should be able to complete the planning, proposal, and program roll-out activities in about three months.

Program Implementation, Support, and Feasibility

Is a recycling program right for you? By using the tools outlined above, you should be able to determine what level of recycling program will work for your organization, but in all cases a recycling program will be cost-effective, and in most cases, cost-neutral or better.

Remember, no single program is like any other. Whether you're supporting an interest in your employee population to recycle, working towards LEED certification, seeking recognition from your community, county, state or national organizations in the form of awards, or even seeking a new selling angle, your program will be unique and should suit your needs.

[12]See Chapter Ten, "Getting a Green Light," of this book for more information on preparing a business case for change.

Waste Reduction Case Study – Comparison of Two **Southern California Office Towers**[13]

By CTG Energetics

Background –

CTG Energetic documented this case study on 2 commercial office buildings located in Southern California. The first was an office tower (OT1) built in the 1950's and was part of a portfolio of buildings that had an existing waste program that able to recycle about 60% of its waste stream. The second was also a large commercial office building (OT2) built in the 1970's in a Southern California portfolio that was recycling 50% of the total waste stream.

Problem –

Research found that the first facility (OT1) was not generating any cost savings due to the lack of a quality control program to ensure proper implementation of the recycling program. Whereas the second office tower that was diverting less waste was generating over $35,000 per year due to the fact that their quality of correct diversion was far better than the first office tower.

Strategy/Solution for OT2

The building management of OT2 administers the waste for the entire facility and recognized it was their responsibility to create a recycling program aimed at reducing the building waste. In effort to create a user friendly program, building management determined that co-mingled recycling was the right fit. Additionally, there was limited space available at the loading dock so consolidated bins were necessary. The occupants deposit of all recyclables in one container and all waste in another. The hauler sorts all recyclables at an offsite facility and reports the diversion (or recycling) rate to the building management. The Janitorial Crew is a crucial component to success and was informed of the new program - two (2) bins of waste to remove in each office, one for trash and one for recycling. To make the program realistic for the custodial team, their cart in which they remove the waste has two bins – ones for collecting recyclables and one for collecting waste. The contents of the cart are emptied into the respective bins at the loading dock. Aside from the recycling success, the building management was excited about the cost benefit as the recycling hauler provides a check each month for the materials received.

Conclusion

When implementing a recycling program the Management of the facility must have an overall strategy. Engaging the suppliers such as the waste hauler and the custodial company can help with the implementation, maintenance and the measurement of the diverted waste stream. Further, thorough education and communication with everyone engaged is vital to ensuring the ongoing success of the program. When implemented correctly, an efficient recycling program can reap rapid cost savings.

[13] CTG Energetics – Constructive Technologies Group, 16 Technology Drive, Suite 109, Irvine Cal. 92618
www.ctg-net.com

To wrap up this chapter, you can see that if you truly think outside of the bucket there are methods of operations that can reap significant financial and sustainable benefits. Historically, reducing costs in janitorial services has been viewed as having a negative impact on the building. With careful planning and communication accompanied by innovative operational processes of system design, daylight cleaning and recycling can reduce cost while enhancing both the building and the services provided.

Remember the old saying about "a mind is a terrible thing to waste"? Well I guess we have turned that around to read "Waste is a terrible thing to mind." Now you know. Being sustainable is a big thing, and our guess is that you never thought about waste management, cleaning schedules, and the like as a place to look for savings. You can't duck that one now.

Next we turn to a look in detail at the daily operations of the business—how information moves around the organization and what you can do to save some bucks whiles simultaneously improving your corporate agility. So let's move back up a notch and take another fresh look at some more of the "stuff" around us everyday that is typically invisible—but has a major impact on what it costs to get things done.

ABOUT THE AUTHOR

Jennifer Corbett-Shramo, IFMA Fellow
Regional Vice President, DCS Global Enterprises
IFMA Foundation Trustee

Jennifer Corbett-Shramo entered the commercial cleaning industry in 1985. During the next 25 years she built and eventually lead one of the largest, most respected, stable and innovative services in Southern California. Her passion for excellence in an industry that is wrought with stigmas was continuously fueled by her love of the custodial community and her drive to provide clean healthy workplaces for her clients and employees. In 1999 when the "green concept" was just entering the vernacular of the cleaning industry Jennifer was pioneering sustainable cleaning for her firm. Sustainable or green cleaning processes were a welcome operation for her company in terms of environmental impact, employee's safety and social responsibility. Those pioneering operational processes drove the firm's remarkable safety performance, crew stability and profitability when other's in the industry were failing and losing market share.

In 2008 as an IFMA Trustee Jennifer served as the Champion for the newest benchmark book for the Cleaning Industry entitled – "The Business of Green Cleaning," by Steve Ashkin and David Holly. This remarkably successful book is now the guide for Cleaning Green in the built Environment. Jennifer is recognized around the globe for her steadfast contributions to the cleaning industry have been recognized by the International Facility Management Association on multiple occasions culminating with her Fellowship in 2006. She is currently serving as an IFMA Foundation trustee and this publication of "Cut it Out" was her own brainchild in answer to the challenges faced by Managers of the built environment in these stressed economic times.

Jennifer is currently a consultant in the business of cleaning where she can impact the direction of the industry on a more global basis. She can be reached at jshramo@cox.net

9 Chapter Nine

The Paper Trail: Follow the Paper: Find the Money

We're full of all kinds of surprises. A couple of chapters back (Chapter Five) we took a close look at the physical office facilities that most employees occupy and offered some ways to make more efficient and more effective use of that space. But what really goes on in there? Stuff (the technical term is information) moves around. From desk to desk; from office to office; and from the inside to the outside and vice versa.

But how many times does anyone stop and think about the mailroom as a place to save money? What about all that paper? We make jokes about saving trees, but it usually stops at that. Hold onto your hat. Diane Coles is about to rock your world again. "Follow the paper, find the money" is a truly relevant chapter title.

Diane Coles
Director, Workplace Services
SCAN Health Plan

Georgia Perkey
Managing Partner, iNPOINT Advisors

The Idea in Brief

Do you know what your company is really spending on office documents, from printing and copying, to mailing, storage and disposal? Within this chapter are several case studies and cost savings ideas that can be adopted—some almost immediately, some over a longer period of time—to reduce the costs associated with "paper."

Because we are dealing with the flow of paper, the case studies also describe the positive impact that reductions in paper can have on the environment. Many of these ideas cannot be implemented without outside help. So we've also included a discussion about outsourcing, other factors to consider, and easy-to-use templates to help you explain the numbers and the pros and cons of your proposals to the CFO and other members of the "C"-Suite. Let's begin by discussing the lifecycle of a piece of paper in an organization.

Figure One: The Life Cycle of Paper

Paper is everywhere; it can enter a company from the mailroom or a fax machine and then gets distributed throughout buildings, floors, work teams, and finally, to our individual desks. Documents are created on our computers and produced or reproduced on paper via printers and copiers. We send these documents to customers through fax machines or the mailroom. We manage, store, and retrieve paper from our desks, in file cabinets, shelves, boxes, and storage rooms.

There are costs associated with each step in the lifecycle of a piece of paper; and thus savings that can be realized all along the paper trail. We are going to show you how you can find the money by following the paper.

Background

According to John F. Mancini, President of AIIM,[1] "If the United States cut its office paper use by roughly 10 percent, or 540,000 tons, greenhouse gas emissions would fall by 1.6 million tons – equivalent to taking 280,000 cars off the road for a year."[2] Americans throw away enough office paper each year to build a twelve-foot high wall stretching from New York to San Francisco. That's 10,000 or so sheets of paper per person! There are nearly 3.7 million tons of copy paper used annually in the United States alone. That's over 700 trillion pieces of paper.

[1] Association of Information and Image Management International (http://www.aiim.org)

[2] Susan Kinsella, Gerard Gleason, Victoria Mills, Nicole Rycroft, Jim Ford, Kelly Sheehan and Joshua Martin. The State of the Paper Industry. The Green Press Initiative, 2007

Believe it or not, the average office worker:

- throws away 45% of everything he or she prints by the end of the day;
- uses 2.5 pounds of paper each week; and
- generates 120-150 pounds of recoverable white office paper a year.

This way of working is a big deal. Most people don't realize that the cost of buying paper is compounded because with each sheet of paper used, organizations incur costs for copying, printing, postage, storage, disposal, and recycling. These costs can multiply very quickly; a recent study estimated that the costs associated with using paper could be as much as 31 times the simple purchase cost (not including labor).[3] Think about it: the ream of paper that you paid $5 for could actually cost the company up to $155! Again, the cost of using paper in an office can run 13 to 31 times the cost of purchasing the paper in the first place!

Questions we need to ask ourselves include:

- Why do we still feel the need to print or distribute all that paper when the information it contains is readily available at a moments notice online or on your hard disk?
- As more and more people work virtually, how will office mail systems have to change to meet the immediate demands of home office workers who make fewer trips to the office and to reduce the excessive costs of express mail delivery?
- What will office or corporate services have to look like in the future? And, most importantly, from a strategic standpoint,
- How should we be preparing for that future now?

Additional issues center around the fact that with laptops, e-books, virtual mail, wireless technology, interactive whiteboards, and web meetings, we are no longer tethered to a desk or a conference room. There isn't such a major need to print multiple copies of meeting minutes and all the documents related to the meeting. So why are we still printing and storing all these paper documents?

Why are we still mailing documents, using expensive express mail services, when we have scanners and email? Why are we still storing documents in file cabinets and storage facilities (both on-site and off-site) when we can retrieve them online, scan them, and store them digitally?

There has been talk about the paperless office ever since computers were invented. Perhaps we may never get there, but we're a lot closer now than we've ever been. In The Myth of the Paperless Office,[4] Sellen and Harper claim, "We are not headed towards offices that use less paper but rather towards offices that keep less paper."

The Mailroom

Let's start with the mail room—the entry and exit point for documents—and show you what some companies are doing to "cut it out." In our research, we found that the top five areas to save money in mailing costs are:

1. Address Hygiene Management: improving the quality of addresses and mitigating returned mail.

2. Worksharing: sharing some of the work done normally by the post office;

3. Postal and Carrier Management; using software tools to shop for the best rates and carrier;

4. Mail Processing and Delivery: changing how inbound and outbound mail is handled, routed and delivered; and

5. Digital or Virtual Mail: digitizing mail at the point of entry in the mailroom.

[3] SWMCB Office Paper Reduction Demonstration Project Final Report, The Solid Waste Management Coordinating Board, February 2002.

[4] The Myth of the Paperless Office, Abigail J. Sellen and Richard H.R. Harper, MIT Press, Cambridge, MA 2002.

Address Hygiene Management

The U.S. Postal Service's costs for handling "undeliverable as addressed" (UAA) mail exceed $1 billion annually. 3.4 percent of First Class Mail is UAA, and the USPS actually destroys 6.4 percent of all Standard Class Mail because it is UAA. Fourteen percent of Americans change addresses annually; and 43 million people move each year. That's one out of every six families. How many of these people are your customers or members? Which messages did they not respond to because they never received the communication? How much returned mail is entering your mail room annually? And what are those returns costing your company (to say nothing of the opportunities lost by not reaching those people)?

Mitigating returned mail and making improvements to your address data can result in very big, multi-million dollar savings. Traditionally, managing addresses meant that you deployed USPS certified addressing tools such as the Coding Accuracy Support System (CASS) and the National Change of Address (NCOA). Many mailers use these tools today in order to attain postage discounts, but all mailers still recognize return mail as a process. Mailers are now focusing on how to improve the process of managing addresses by identifying the root cause of returned mail. Using the correct tools in the right way, mailers can mitigate a large percentage of return mail and reduce the associated costs. One cable systems operator recently saved $1 million annually by doing just that.

Address Hygiene Management Case Study

The Problem

A cable systems provider didn't know how many direct mail pieces were getting delivered. When the company tested, they found that 15% of its marketing material never reached its destination.

The Solution

Pitney Bowes Management Services Mailstream Consultants identified the root causes of the undeliverable mail and incorporated a complete addressing solution that included the use of both automated addressing tools and PBMS processes to identify bad addresses prior to print, and to investigate and correct addresses that could be upgraded to improve response rates, and suppress any undeliverable addresses from printing and mailing.

The Cost Savings

The company suppressed undeliverable addresses prior to print, avoiding wasted print, production and postage costs, and saving the company more than $1 million annually.

The Marketing Impact

Forty-eight percent of the defective addresses were correctable through the PBMS address management process. Each one of these corrected addresses meant that a potential customer received the message, thereby improving the company's response rate.

The Environmental Impact

Address Hygiene Management saves unnecessary waste, water, and reduces landfill use and disposal fees

Source: "PBMS Helps Cable Systems Operator Reconnect with Customers and Prospects, Pitney Bowes Management Services, Managed Address Services

Worksharing

In the early 1990s, the U.S. Postal Service initiated a "worksharing" concept by introducing discounts for presorted and automated mail. The amount of the discount depends on the depth of the sort. The less work created for the post office, the greater the discount. Mail can be automated and bar-coded to three levels: the three-digit level; the five-digit level; and the carrier route level. The deeper the level, the more the mail moves downstream in the post office, and the greater the savings to you. There are many companies that provide mail presorting and automation services; they can be found on the National Association of Presort Mailers (NAPM) website: http://www.napmweb.org/.

Using a presort company can reduce your mailing costs by ten to twenty percent, depending on mail volumes.

Postage and Carrier Management

There are several software tools available to help you determine the best way to move mail from point A to point B. These tools provide real-time information on carriers (such as DHL, Fed-Ex, UPS, Express Mail) to identify which one will deliver your specific mail piece on-time and with the lowest rate. The carriers can also manage mailing and shipping expenses for multiple mailroom/shipping locations, charge back mailing expenses, and provide detailed cost information of your postal and carrier expenses all in one place. For more information, go to the USPS Postal Customer Council website at http://www.usps.com/nationalpcc/Mail Processing and Delivery

Three ways to save money right now on mail processing and delivery are:

1. Implement a good solid policy for inbound/outbound mail

Having a well-defined policy for handling inbound/outbound mail can result in significant money savings and staff resources for delivering and handling mail pieces.

Now is the time to re-examine the process for the internal distribution of mail. Sorting at the desk level, building level, or work-team level can make a major difference in costs and resources. Sending mail through email rather than overnight can clearly cut expenses. Creating a policy on express and overnight mail, and clearly defining those parameters, can produce significant savings.

2. Use the Hub and Spoke method

Another way to save money is by processing mail using the "hub and spoke" method, sorting all mail at the hub (corporate headquarters) and sending it out to the spokes (satellite offices). The hub and spoke model is a system of connections arranged like a bicycle wheel, in which all mail moves from "spokes" that are connected to the hub at the center. In the 1970's, Fed-Ex adopted the hub and spoke model for overnight package delivery. This model is very efficient for a number of reasons. By centralizing the mailroom function, you can reduce staff resources, and management can concentrate on mail at one central location. All mail can then be sorted at the hub rather than in multiple locations, allowing for better efficiency and bigger "worksharing" or presort discounts.

3. Cull your junk mail

According to the Consumer Research Institute, Americans throw away 44% of bulk mail unopened, yet they still spend eight months of their lifetime opening bulk mail. Does your mailroom receive large quantities of junk mail and catalogs that aren't related to your business? Does your company allow personal mail? Is the mailroom staff spending unnecessary time sorting through junk mail and personal mail? If so, then you should consider culling (or removing) these unrelated business items. There are several ways to accomplish this goal:

- Create and distribute a form letter asking organizations that send you unwanted mail to remove your data from their lists;
- Call (800) 333-0505 or send an e-mail to custserv@dnb.com to have your company's address removed from lists sold to others;
- Send a list of former employees to Red Flag Employer

Services: http://www.ecologicalmail.org.

- For more tips to reduce your business junk mail, visit http://dnr.metrokc.gov/swd/nwpc/bizjunkmail.htm and http://www.stopjunk.com/news.html

Virtual Mail

Virtual mail is mail that is digitized at the point of entry in a company, the mailroom. It is mail that is not only scanned but also bar-coded, indexed, processed and tracked throughout its lifecycle. In the digital mailroom, inbound first class and interoffice mail is captured, classified and routed to the appropriate person or department. Audit trails are provided to track correspondence from entrance through transaction flow through archiving. This trackability brings mail-based communications in line with internal policies and regulatory compliance requirements to which most other digitized business documents in an organization are subject. Mail pieces are electronically distributed from the mailroom straight to the end-users' desk.

An added benefit to virtual mail is the ability to implement workflow and document management tools within your organization. This will establish the "view anyplace, anytime" vision for paper documents. It's paper on demand without waiting for personal delivery, making it as fast as email. The workflow of the paper, or mail piece, is processed completely online which can dramatically reduce costs not only the mailroom but throughout a variety of end user departments and in a variety of areas including:

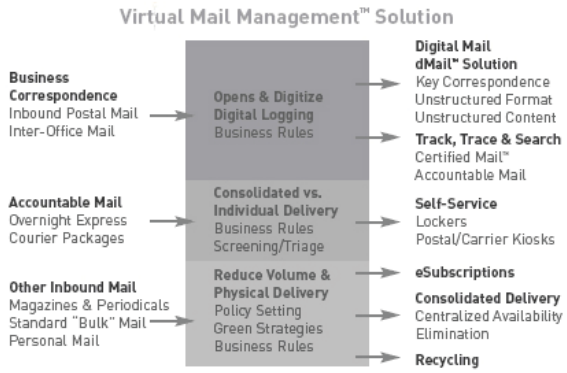
- Real estate
- Mail handling and delivery
- Courier services
- Paper
- Copying/printing
- Records management
- Filing and storage
- Business unit productivity

Virtual mail is the next stage in the evolution of the virtual office. The internet has transformed the way we do business from booking vacations, banking, buying automobiles, managing investments, invoicing customers, and buying goods and services. Virtual trade and e-commerce will continue to grow in scale and activity automating more and more business processes and workflows. The virtual workforce is increasing as technology advances and mobile workers need immediate access to documents to remain productive. Companies are looking for ways to slash real estate costs and virtual mail can help through reduced square footage for files, storage and document management.

With virtual mail, you have much better control over your mail and the speed of delivery, processing and response to customers. It allows for a better connection to mobile or remote workers, improves workflows and helps create a "Less" paper environment which reduces the carbon footprint and saves money at the same time.

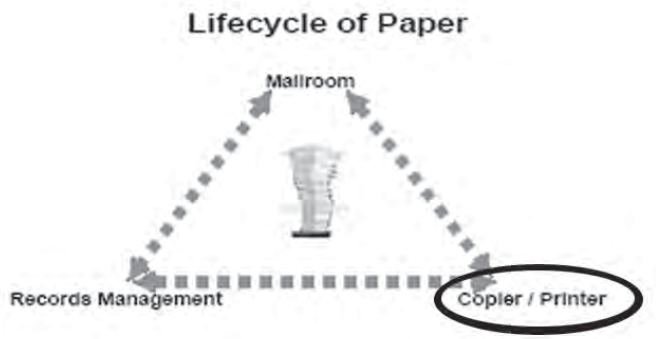
Virtual mail can be implemented in-house or outsourced. If you want to implement virtual mail in-house, you should be processing at least 100,000 pieces of mail per month and operate a large number of offices to justify the costs. If you can't afford the capital outlay, then outsourcing is the next best thing.

Figure Two: Virtual Mail Management[5]



[5]Source: "Virtual Mail Management Solutions in an Increasing Virtual World." Pitney Bowes, November 2008

Copying and Printing



Moving from the mail room, let's take a look at copying and printing, where the majority of paper in a company is wasted. The average office worker uses 10,000 sheets of copy paper each year. Listed below are four ways to save money, reduce this number, and save the forest too. The first three suggestions are quick, easy, and can be implemented immediately with minimal cost. The last two ideas will require more time but will reap a higher return on your investment.

Paper Saving Ideas

1. Think before you print. Be reasonable and print only when it is a must. The following actions are important to promoting and implementing your grass roots "Think Before Your Print" campaign:.

- Obtain executive buy-in and issue a letter from the CEO or another executive who is passionate about the environment.
- Partner with IT and HR to establish guidelines around paper use, printing, and copying.
- Find champions in your company and establish a "green" committee that will help create and spread your message to "Think before you print."
- Preview documents before printing. Using the print preview allows you to proofread your document for errors before you print.
- Always use the spell/grammar tool to help avoid errors that can lead to unnecessary reprinting of documents.
- Print only the pages you need. If only a few pages of the document are really needed, print only those pages instead of the whole report. Most software programs provide this option within the print function.
- Consider sharing some documents with co-workers rather than printing one for each individual.
- Print only the number of copies needed for a meeting; don't make extras.

2. Double up. Use both sides of the paper. Set two-sided printing as a default on your print drivers.

Duplex printing can cut your costs by 50%. Set your printers and copiers to double-sided printing by default to promote an office culture of printing on both sides of the sheet of paper.

Duplex Printing Case Study

The Problem

A company of 20,000 wanted to reduce paper use

The Solution

The company set printer drivers to default duplex and started a green campaign to encourage employees to print what is needed

The Cost Savings

They saved $53K in paper costs (based on reducing paper use by 916 cases plain paper at $40/case and 245 cases color expressions at $66/case

The Environmental Impact

They reduced paper use by 32% over a 1-year period

Source: Xerox – How Green is your Office?

3. Color only when appropriate; use color responsibly

Most of us want to impress our coworkers with jazzy, colorful presentations to get our messages across. Your most-important presentations will have a much greater impact if you minimize the number of times you bring color copies to meetings. And there are ways to make presentations without printing multiple color copies, like using a projector, electronic whiteboard, or web meeting to display your graphic aids.

4. Change the ratio of people to copiers/printers/scanners; reduce the number of print/copy devices and place them where they are most needed

As a facility manager, over the years you've watched the flow of copiers, printers and scanners come and go and move from place to place as you manage office moves. Those moves may or may not have taken into consideration the printing needs of your customer. You may have high-end copiers where there is little use for them. Or—perhaps the opposite—low-end printers when there is a genuine need for high quantity and speed. Perhaps you are stuck with equipment from more than one vendor, with no standards and multiple maintenance and supply contracts. If that is the case, this is the time to evaluate your copiers and printers and their related staffing ratios. Significant cost savings can be achieved through careful print management, as seen in this Sun Microsystems case study.

Copier/Printer Case Study

The Problem

Sun Microsystems had escalating global printing costs, supply costs and internal support costs. There were thousands of invoices per quarter from a number of suppliers and no single point of accountability. They inherited additional print infrastructure from two recent acquisitions.

The Solution

A Xerox Office Document Assessment resulted in a methodical in-depth audit of all devices globally. They implemented a regional implementation of standardized office environments for flexibility to adapt to ever changing needs. A single point of contact and consistent service levels were established.

The Cost Savings

Print costs reduced by more than 25% around the world. Right-sized offices globally, improving employee-to-print device ratio from 7:1 to 20:1. Thousands of invoices per quarter reduced to just one per month per country.

The Environmental Impact

Lowered waste and energy costs by reducing document related consumables (printer and toner) and installing energy-efficient multi functioning devices.

Source: "Xerox Helps Sun Microsystems Optimize IT and Workplace Services and Save Millions Per Year, Case Study, Xerox Corporation, 2008

Records and Information Management

The last area for savings when following the paper trail is in records management—the capturing, indexing, storage, management, and retrieval of records. Here are three ways to save money in this area and, at the same time improve the environment. They do take some time to implement—especially the third, electronic records management, which can have big payoffs not only in dollars, but also in employee productivity, customer service, regulatory compliance and improved business processes. This area is huge; it requires careful research, planning, and financial analysis before you take the leap. The three methods are:

1. Records Management Program: Creating and/or updating your Records Management program and Records Retention Schedule

2. File Purging: Purging unnecessary paper and files as designated in the records retention schedule.

3. Electronic Records Management; Implementing scanning and electronic document management

Records Management

Most companies have a records management policy and a records retention schedule that states when, where, and how long documents are to be stored and disposed of. Does your company have a retention schedule? If not, this is the time to develop one so you can begin destroying unnecessary paper that is taking up valuable real estate in file cabinets, storage rooms, and offsite storage.

If you do have a records retention schedule, when was the last time it was updated? Are you in compliance? Are functional departments in your organization destroying paper according to the schedule? Are there duplicate copies of records kept in multiple departments? Is the original available in electronic format? If so, why keep a paper copy?

To learn more about records management and records retention schedules, we recommend the Association of Records Managers and Administrators (ARMA) website http://www.arma.org, where you can find a wide variety of resources. Partnering with those in your organization who are responsible for records management, you can make a difference as a Facility Manager by reducing filing, storage space, and related real estate costs.

File Purging

Once the records retention schedule is updated, the next step is educating user departments and implementing a file purging program. One transportation company in southern California purged sixteen tons of paper before moving into new corporate headquarters.

File Purging Case Study

The Problem

A transportation company in southern California with 600 employees wanted to reduce real estate costs by moving from 5 office buildings into a central headquarters. They also wanted to reduce the square footage allotment for file and storage space in the new office.

The Solution

They educated staff on the records retention schedule and instituted a file purging contest. Every Friday for 2 months prior to the move, user departments purged and weighed their unnecessary paper. Winners were given extra time off, free lunches, and casual days.

The Cost Savings

Reduced rental costs for file space by 25%. Cost avoidance to move 16 tons of paper.

The Environmental Impact

Recycled 16 tons of paper

Electronic Records Management

The current economic crisis has resulted in increased focus on the bottom line, the environment, higher productivity, and regulatory compliance. Electronic records management addresses all of these issues and more. With electronic records management technology, you can scan and capture paper into a central repository where documents can be indexed, moved through workflow processes, retrieved remotely, and stored digitally. Use of a common records management platform allows organizations to share information quickly with colleagues, business partners, and customers, thereby minimizing response times and increasing productivity.

Electronic records management improves control of records by making them easier to track and access, and to comply with the records retention schedule. This approach also ultimately improves regulatory compliance. As more workers telecommute, scanning and electronic records management will allow those remote workers much easier access to important documents. Coupled with wireless technology, scanning can result in both large savings in real estate and reduced filing and storage requirements.

To implement electronics records management, start by examining workflows and follow the paper as it flows from one desk to another; then drive it (the paper) out of the core process through automation. This technology and process change helped to move the London Borough of Islington into the new age of the “less” paper office.

Electronic Records Case Study

The Problem

It was costing the London Borough of Islington approximately £6,000 per annum to maintain a single desk in London. In order to allow more flexible working the Council needed to reduce dependency on centrally-held paper files.

The Solution

They digitally archived their documents and implemented Xerox’s web-based enterprise content management (ECM) software, DocuShare. They replaced individual desktop printers with Xerox multi-functional devices.

The Cost Savings

Paper free working helped the council to save £8 million in 2007 and consequently residents of Islington pay one of the lowest council taxes in London.

The Environmental Impact

They significantly reduced the council’s printed output and save paper and energy. Home-based workers reduce traffic congestion and pollution, helping the council achieved its objectives for a greener Islington.

Source: Promoting Sustainability Through Digital Archiving at the London Borough of Islington, Xerox Corporation, 2008

Electronic document management technologies can be purchased as stand-alone systems, as a web-based application, or through an outsourcing service provider. The appropriate solution for your organization depends on many different variables such organizational size, processes, financial analysis, your particular goals, and so on. An important resource for this topic is the Association for Information and Image Management (AIIM: http://www.aiim.org), whose website has numerous white papers, case studies, and webinars on electronic content management (ECM), enterprise document management (EDM), and business process management (BPM).

Think about how much more productive your company can be by digitizing information and increasing the effectiveness of core processes like accounts payable, accounts receivable, invoice processing, purchasing, sales, claims processing, customer service, and medical records. For a company with many field offices, the savings in paper, shipping, courier services, and transportation can easily justify the cost and effort of scanning and creating electronic records. “Digitizing” paper-based information enables greater flexibility for virtual collaboration and employee productivity no matter where your employees are working.

Though we are excited about the future of virtual records, we are not advocating that you digitize all of your documents. In some cases, it is more cost-effective to leave them as they are today. For example, for inactive records that are never retrieved but must be kept in offsite storage per your records retention schedule, it may be cheaper to archive rather than digitize. Your decision really depends on the financial analysis. In some cases the cost of converting old records versus the cost of offsite storage may not make economic sense. The real savings come with “inserting” scanning into your core business processes, and the earlier you digitize a record in the process, the more cost-effective it will be.

There are many different options to think about when considering scanning and related costs. Should you:

- scan on demand?
- scan what you need only when you need it?
- selectively scan records that you might need later?
- scan a small subset of a larger file or record?
- scan vital records you might need in the event of a disaster?

There are so many factors to consider in conducting an ROI for electronics records management that the financial analysis can be mind-boggling when you begin drilling deeper and deeper into each area listed in Figure Three—particularly with employee productivity.

Figure Three: Electronic Records Management ROI Considerations

Costs	Savings
Hardware • Servers • Hosting & maintenance • Scanners	Real Estate • Filing • Storage • Telecommuter ratio to office space
Software • Licenses & maintenance	Equipment Costs • Copiers • Printers • Fax machines • File cabinets • Shelving
Telecommunications • Connectivity	Printing Cost Avoidance • # Pages not printed • # Emails not printed • # Faxes not sent
Professional Services • System selection and design • Implementation • Training • ROI Analysis	Mail Cost Avoidance • Postage saved • Courier services • Express mail • Transportation • Fuel
Ongoing Operating Costs • Technical FTE's • Business FTE's • Professional Services • Training	Offsite Storage Cost Avoidance • Storage space saved • # Boxes not put in storage • Box transfer cost • Box storage cost • Box retrieval cost
Employee Productivity Loss • Working hours lost • Business FTE's	Employee Productivity Gain • Working hours saved • Business FTE's
	Supply Cost Avoidance • Toner • Paper • Ink • Binders

An added benefit of electronic records is its positive contribution to business continuity. In the event of a disaster, having the capability for employees to access important records remotely—from home or elsewhere—will allow your organization to resume business quickly and serve your customers in difficult times. It is strongly recommended that vital records, which are those needed to resume business quickly in the event of a disaster, be listed in your records retention schedule and cross-referenced in your business continuity plan. When developing your electronic records management plan, give serious consideration to scanning those vital records first.

Outsourcing

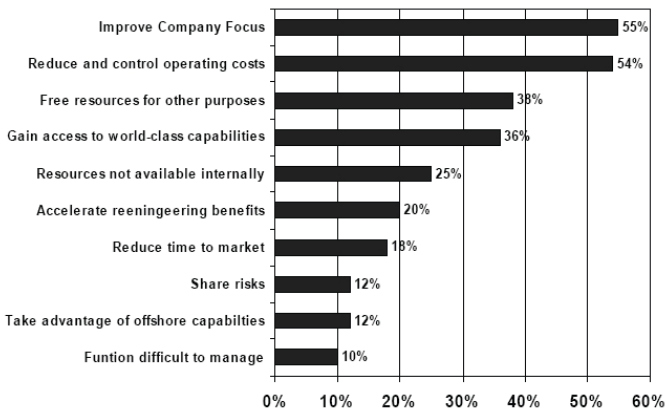
As we have suggested, there are many ways to save money by following the paper trail in your organization. As you are evaluating these ideas, you will also want to investigate the potential advantages of outsourcing some of those services. Outsourcing the management of day-to-day activities to a third-party provider is typically done for several reasons. One of the main arguments for outsourcing is the ability to transfer internal fixed costs to a service provider, who can often do the same work at lower cost. The service provider can usually do the work at lower cost because of its ability to leverage staff and resources across its entire client base.

In addition, the service provider has often developed best-practice processes and automation that add to this leverage and contribute to the lower cost structure. There are also several other equally compelling reasons for outsourcing the operations of the mailroom, printer/copier management, and records and information management. These include:

- the ability for your team to focus on their core competencies;
- the enhanced quality generated by a specialized service provider with more experienced and focused staff expertise;
- the ability to manage fluctuations in business demands more easily; and
- the ability to "lease" both the staff and the equipment, thereby avoiding large capital expenditures.

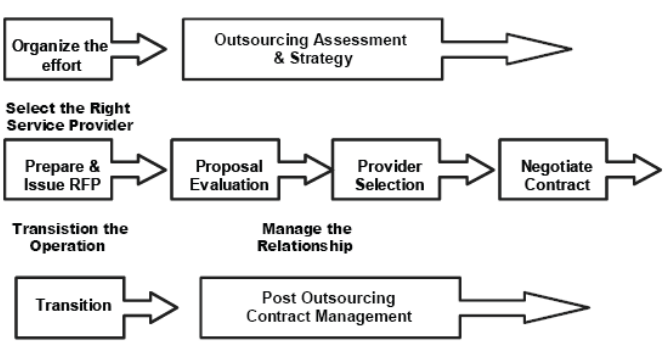
Figure Four identifies the top ten reasons that companies look at outsourcing in general:

Figure Four: The Top Ten Reasons that Companies Outsource[6]



There are many variables involved in determining whether or not your company would find value in outsourcing a function or a department. The process of gathering the supporting information must be structured with a definite set of goals and objectives. The Figure Three describes the components of a comprehensive procurement process.

Figure Five: Outsourcing Procurement Process[6]



Step One: Create a project plan that outlines who will be involved in the data gathering, review, and final decision-making. Put a timeline together that details when and how these tasks will be completed.

Step Two: Conduct an assessment of the true needs and requirements. Create a matrix of what activities are being considered, and why. This step includes gathering input from all stakeholders. From the end-users, you need to understand their expectations about outcomes and service delivery. From the employees involved in the process , you must understand the time they spend on each activity, the cost of performing those activities in terms of time and other resources, and the volume and frequency of each activity. From senior management, it is important to understand the value of the investment in the relevant activities.

Step Three: Prepare a Request for Proposal that outlines in detail the activities you want the service provider to deliver, including volume, time frames, and quality agreements. Send RFP to a list of firms who could provide the services. Figure Six includes a typical table of contents for an RFP.

Figure Six: Sample Office Services RFP Table of Contents[6]

Step Four: Receive the proposal documents from the vendor and evaluate these documents in a side-by-side comparison. The comparison will include:

- Ability to meet all requirements
- Cost for varying levels of service delivery
- References from clients in similar industries with similar requirements and scope of work
- Need for capital investment or other one-time, upfront costs
- Skills and experience of staff being proposed by the service provider
- Background, including age of company, financial stability and security, industry reputation

Section 1: Current State
Description of your existing situation and environment, including strengths and weaknesses, staffing, and high-level costs

Section 2: Future State
Description of your vision for the future, including goals and objectives

Section 3: Services Requested
Detailed description of the services you want to see delivered. This should include a reivew of the functions, level of skill and experience expected in the staff and account management that will be provided, status reporting, account management and additional vendor qualifications, such as size of company, insurance, etc.

Section 4: Proposal Response Contents
Identify the information that must be provided with the vendor's response. This will include ata minimum:

- Project Plan
- Staff Resource Requirements – service provider and client
- Equipment Requirements
- Template for Cost Estimates
- Provider Qualification Summary
- Client References

Section 5: Proposal Evaluation Criteria
Define the way in which the proposals will be evaluated and scored.

[6] InfoTrends/CAP Ventures, Workflow Production Consulting Services, January, 2004.

Step Five: Select your provider of choice and negotiate a win-win agreement

Step Six: Create a transition plan, which should include all the components of Change Management discussed in Chapter 11. It is important not to underestimate this part of the program as outsourcing constitutes a major cultural change for any organization. However, if you engage your end-users in the project and in selecting the new service provider, you will be in good shape for the transition.

Step Seven: Create a mechanism for monitoring the services being delivered as compared to the contract. It's also a good idea to engage your users in on-going satisfaction surveys.

Because the process of outsourcing can carry risk, it is sometimes helpful to enlist the help of a consultant in this process. An alternative is to conduct your own background research and obtain information and templates that will guide you from Step 1 through Step 7.

We have included a template for planning an outsourcing project as an Appendix at the end of this chapter.

Outsourcing Case Study

The Problem

The University of Calgary wanted to find more cost-effective ways to meet the document demands of students and staff and be a "greener" campus. To attract the brightest students and top faculty, the university realized the need to transition from a paper-based learning environment to a digital one.

The Solution

Dubbed Project Imagine, U of C partnered with Xerox Global Business Services to improve devices, systems and processes related to the creation, sharing, storage and delivery of documents across the university.

The Cost Savings

$3.76 million in savings. Reduced paper usage by 22%. Streamlined third party vendors by 25%.

The Environmental Impact

Reduced energy use by 9%, greenhouse gases by 10% and total weight of solid waste 23% in the office.

Source: "Xerox Makes the Grade at the University of Calgary, Case Study, Xerox Corporation, 2009

Summary

This chapter has a double benefit, in that it suggests changes you can implement that have both economic and environmental benefits.

Following the lifecycle of paper is the key to cost savings. Digitizing documents when they enter the office can produce substantial savings not only in resources but also in real estate, filing activity, and storage requirements. There are many quick easy ways to save money now and other, more complicated methods, that rquire outside assistance. Involving other departments, breaking down silos, and taking a holistic view of the paper trail will reap much bigger savings than anything you can do on your own.

There are many different ways to come closer to becoming a paperless office. The best approach is to establish a multi-function team, lay out all the strategies, prioritize them, develop a plan, and begin implementation. Remember to follow the paper, process-by-process, and eliminate inefficient business practices. It's possible to reduce paper usage dramatically with minimal business disruption. And with the growing popularity of the green movement, employees are more ready than ever to embrace the change.

Will we ever become completely paperless? Perhaps not. But we will require less paper as technology advances and more people telecommute. According to Xerox, "More and more, people are finding that paper is a temporary medium, ideal for sharing in meetings, organizing our day, reviewing/ revising, etc., and then discarding."[7]

What's Next?

Here are some paper trail trends to keep an eye on:

Shared Mail Services: Pitney Bowes recently launched a Shared Client Services Center in Michigan that brings mail services from multiple customers and locations into a shared facility. This capability helps companies of any size reap significant benefits and cost savings.[8]

Erasable paper: Xerox Research Centre Canada has created erasable paper; when exposed to light, the print gradually disappears after 16 to 24 hours. The paper can be re-used and loaded again and again into a printer or copier.[9]

Solid ink printing technology: Xerox has a new product called ColorQube that replaces toner; it is essentially a cartridge-free solid ink stick (like a crayon). There is nothing to dispose of because the solid ink ends up on the paper, not in recycling.[10]

Zumbox.com: A paperless postal service that enables anyone to send and receive mail electronically. This means that your home mailbox is on the web. It is different from email as it is actually postal mail. You can sign up and send businesses you interact with "Please Do Not send Paper Mail" requests. With Zumbox, your paper mail ends up in a Zumbox account and you no longer have to deal with all the paper mail yourself.[11]

Swiss Post: Switzerland's national postal operator will use technology developed by Earth Class Mail of Seattle to digitize and deliver regular (snail) mail electronically in six European countries.[12]

[7] The "Less Paper" Office: How to Reduce Costs, Enhance Security and be a Better Global Citizen, Francois Ragnet, Managing Principal, Technology Innovation, Xerox Global Services, Xerox Corporation White Paper, March 2008.

[8] "Pitney Bowes Launches Shared Client Services Centers," April 6, 2009: http://news.pb.com/article_display.cfm?article_id=4478.

[9] Experimental Xerox Paper Erases Itself, Results In Temporary Documents On Reusable Paper, http://www.xerox.com/innovation/news-stories/erasable-paper/enus.html.

[10] ColorQube Wows Industry http://www.office.xerox.com/color-printing-cost/enus.html

[11] "The Paperless Postal System, No Paper, No Scanning, No Delays," https://www.zumbox.com/

[12] "Earth Class Mail and Swiss Post Preparing to Launch Swiss Post Box™ Service in Six European Countries," February. 11, 2009. http://www.earthclassmail.com/Earth-Class-Mail-and-Swiss-Post-Preparing-to-Launch-Swiss-Post-Box-Service-in-Six-European-Countries

Virtual Office Services: Several companies are emerging that provide virtual office services. They allow you to have an address anywhere in the world; they digitize your mail, provide a virtual receptionist, a virtual office assistant, voicemail, and other services that enable you to do business from anywhere at anytime. You can have a personal presence in some of the most prestigious areas in the world. Imagine having a virtual office with a Paris address while you work from your boat on Lake Michigan![13]

References

The Myth of the Paperless Office, Abigail J. Sellen and Richard H.R. Harper, MIT Press, Cambridge, MA 2002.

How Green is Your Office? Practical Tips to Green Your Office While Cutting Costs. So Cal Office Technologies, A Division of Global Imaging Systems, A Xerox Company.

Virtual Mail Management Solutions in an Increasingly Virtual World: The Solution for Today's Cost-Conscious and Environmentally-Responsible Enterprises. Pitney Bowes, White Paper, November 2008.

Unleash the Power of the Digital Mailroom: Automate business correspondence to improve efficiency and communication, Francois Ragnet, Managing Principal, Technology Innovation, Xerox Global Services, Xerox Corporation White Paper, January 2008

The "Less Paper" Office: How to Reduce Costs, Enhance Security and be a Better Global Citizen, Francois Ragnet, Managing Principal, Technology Innovation, Xerox Global Services, Xerox Corporation White Paper, March 2008.

Automate Your Document Workflow: Imaging & Workflow Solutions, White Paper, Pitney Bowes, 2009.

Document Outsourcing User Perspective, Production Workflow Consulting Services, CAP Ventures, January 2, 2004.

Pitney Bowes Mailworks Solutions: Mail Center Management, White Paper, Pitney Bowes, 2007

Maintaining Mail Safety and Security on a Budget, White Paper, Pitney Bowes.

Promoting Sustainability Through Digital Archiving at the London Borough of Islington, Case Study, Xerox Corporation 2008.

Xerox Makes the Grade at the University of Calgary: Enhancing education and Research Through Improved Information Management and Document Services, Case Study, Xerox Corporation, 2009.

Xerox Helps Sun Microsystems Optimize IT and Workplace Services and Save Millions Per year. Case Study, Xerox Corporation, 2008.

State of the ECM Industry 2009, AIIM Industry Watch, AIIM, 2009

Total Economic Impact of Oracle Enterprise Content Management Suite, Jonathan Lipsitz, Lauren Hughes, Prepared for the Oracle Corporation, Forrester Consulting, April 2009.

Intelligent Imaging: Scanning Only What You Need, Only When You Need It, Jim Stephenson, Document Management Consultant for Iron Mountain, KMWorld, July/August 2007.

PBMS Helps Cable Systems Operator Reconnect with Customers and Prospects, Case Study: PBMS/Managed Address Services, Pitney Bowes.

13 United Virtual: http://www.unitedvirtualoffice.com/; Officescape: http://www.officescape.com/WebCenter/PublicSite/services/new_office/virtual_office.aspx; DaVinci Virtual Office: http://www.davincivirtual.com/;
International Association of Virtual Office Assistants: http://www.iavoa.com/

Selected Resources:

- Association of Information and Image Managers (AIIM): http://www.aiim.org
- Association of Records Managers and Administrators: http://www.arma.org
- Consumer Research Institute: http://www.stopjunk.com/news.html
- InfoTrends/CAP Ventures: http://www.infotrends-rgi.com/public/home.html
- National Association of Presort Mailers (NAPM): http://www.napmweb.org/
- National Postal Forum: http://www.npf.org/
- Reduce.org: http://www.reduce.org
- The Outsourcing Institute: http://www.outsourcing.com
- United States Postal Customer Council: http://www.usps.com/nationalpcc/

Appendix: An Outsourcing Analysis Template[14]

Project Name	Scanning System	
Project Description	Scanning System for Shared Service Center	
Option 1	Company A	
Option 2	Company B	
Cost Summary	Company A	Company B
Time to Implement (hrs)		
Consulting Costs		
Hardware Costs		
Software Costs (Fixed Modules)		
Software Costs (Seat/Licenses)		
Travel & Expense Costs		
Annual Support & Maintenance		
TOTAL COSTS		
Cost Detail		
Time to Implement (hrs)		
Analysis/ Design		
Project Management		
Development / Implementation		
Testing		
Training		
Total		
Consulting Costs		
Analysis/Design		
Project Management		
Development/Implementation		
Testing		
Training		
Total		
Hardware Costs		

Scanners		
Scanning Workstations		
Servers		
Total		
Software Costs (seat/Licenses)		
Image Capture		
Core System		
Workflow		
Total		
Travel & Expense Costs		
Total		
Annual Support & Maintenance		
Image Capture		
Core System		
Scanner		
Total		
TOTAL COST		
Qualitative Comparison		
Company Background		
Size of Company / # Employees		
Size of Company Revenue		
Service Delivery Platform		
Support Platform		
Account Support		
Client Interview Summary		
Client Interview – Transition Issues		
Delivered on expectations?		
Technical Support		
Training		
Cultural Change Support		
Other		

We're almost there. We've given you nine different ways to Cut it Out! We've offered up everything from the mundane (take out the trash) to the unexpected (what do these changes in work patterns do for my community?). This chapter has focused on what you can do when physical documents aren't necessary.

But we're not quite done yet. The last two chapters of this book shift gears a bit so we can get to the ultimate question: "Okay guys, how do you make all this neat stuff happen?" Our answer comes in two parts. First, we want to show you how to build a business case to turn on the green light that means approval to actually do something. Then we'll wind up the book with how to get the lead out (no pun intended) and make a real difference.

ABOUT THE AUTHORS

Diane Coles
Director, Workplace Services
SCAN Health Plan

Diane is the Director of Workplace Services at SCAN Health Plan in Long Beach, CA. She has over 20 years' experience in corporate real estate, facilities management, business continuity planning, procurement, and records and information management. Diane thrives on making change and is passionate about the future of work, telecommuting and transforming the office into a place that is enjoyable, productive, sustainable and economical. She spearheaded an innovative alternate workplace strategy called the AWESOME project to save costs, improve work-life balance and attract and retain employees.

As a former records and information management consultant, Diane worked with major corporations and government agencies to develop records management programs. Her work in business continuity planning is outlined in the September/October 2006 issue of the Facility Management Journal (FMJ), "Prescription for Success: Business Continuity Planning in the Health Care Industry."

Diane is a past president of the IFMA Orange County Chapter and the current secretary of the IFMA Corporate Real Estate Council. Diane is a member of CoreNet and holds their Masters in Corporate Real Estate (MCR) designation. She is also a member of the Workplace Innovation and Performance Network (WIPN).

Diane is the recipient of the 2009 IFMA George Graves Facility Management Achievement Award, the 2009 IFMA Orange County Chapter Award of Excellence in Facility Management for the AWESOME project, the 2007 IFMA Orange County Chapter Professional Member of the Year, and the 2005 IFMA Orange County Chapter Award of Excellence in Facility Management. Diane was recently named a 2009 Southern California Real Estate Journal "Woman of Influence." Ms. Coles can be reached at: dcoles@scanhealthplan.com

Georgia Perkey
Managing Partner, iNPOINT Advisors

Ms. Perkey is a seasoned business leader who has a unique background that includes both internal and external executive level positions. Her experience has included roles as Vice President of Operations, Chief Information Officer, and Senior Managing Director of Strategy Consulting. In these roles, she has focused on solving operational and management problems by better utilizing people, process, and technology. She has a solid track record in effectively identifying and managing organizational change from the idea through to its execution, and has authored several methodologies in Program, Project and Change Management for industry groups and companies. Through her work, she has earned a reputation as a strong business leader, change agent and group facilitator – creating positive energy around operational, organizational, and technology change at all levels within an enterprise.

Ms. Perkey has worked for companies in Real Estate, Financial Services, Health Care, Retail and Hospitality, Engineering and Construction. Some of her client and company associations include Earth Tech (a division of Tyco International), CB Richard Ellis, PricwaterhouseCoopers, Ernst & Young, California Pizza Kitchen, GMAC Commericial Mortgage, Washington Mutual, Bank of America, BRE Properties, PacTel Properties, Mellon McMahon Asset Advisors, Blue Shield of Northern California, Allegis Realty Investors, Glenborough Realty Trust, Kaiser/Permanente Health Care, University of California Medical Center.

Ms. Perkey's education includes an MBA in Business Analysis and Information Systems from California State University at San Francisco. She has been an active participant in the real estate industry since 1983. She has served the organization for Commercial Real Estate Women in its early years with leadership positions at both the local and national level. For CoreNet Global, she headed the "Technology and the Web" research tract of the CoreNet Global 2010 Research project. She has also been an active contributor to IFMA, BOMA, and IREM in terms of speaking and writing.

Ms. Perkey also believes in supporting her community. Her current commitment is as a Board member on the Foundation of the Los Angeles Biomedical Research Institute, serving as the Chair of the Discovery Showcase. She is also the Program Chair for the Organization of Women Executives.

Currently, Ms. Perkey is the Managing Partner for iNPOINT Advisors and can be reached at gperkey@inpointadvisors.com

10 Chapter Ten

Getting the Green Light: Preparing the Business Case

Hang in there. We're in the final stretch. After you have thought about everything we've suggested in the past hundred pages or so, what do you do now? You're convinced you need to move towards sustainability, you've got a bunch of specific ideas, some plans are developing, and you have more than enough back-up data to make the case. Now you've got to go sell it. You have to get the "greenlight" from your own management to proceed—especially if you need up-front funds to yield that big gain downstream.

Now it's time to put on the accountant hat, pull down the green eyeshades (that's a joke), and go speak to your CFO. You need a business case. Georgia Perkey (our resident expert) lays it out for you right here, step-by-agonizing step. Follow Georgia's lead; we guarantee you'll be invited back into the "C" suite, your ideas will gain a new respect, and you'll end up being a hero.

Georgia Perkey
Managing Partner, iNPOINT Advisors

The Idea in Brief

After reading to this point, you no doubt have surfaced many ideas about initiatives that will help you cut costs and/or become more efficient and effective. And, if you've followed the advice in Chapter One, you've also selected the initiatives that have the highest value to your company. Before you can move toward implementing these projects, you have to sell your ideas to one or more individuals within your organization. This chapter will focus on how to get a "Yes" for your project. It will help you understand how to prepare, sell, and present your business case.

A business case is the formal justification for pursuing an action. It describes the investment that will be required in terms of time, people, money, and other organizational resources. It also describes why this investment will be a wise one for the organization in terms of:

- Benefits, both short-term and long-term
- Support for the business strategy and operational objectives
- Gaining a competitive advantage
- Enhancing customer/client satisfaction

The business case will also guide you in planning the project and managing the implementation, topics which are covered in the next chapter.

Section One: Preparing the Business Case

A business case typically contains a discussion of the topics identified below. Of course, the larger and more complex the project, the larger and more complex the business case. For smaller projects, the narrative presented in the business case is scaled appropriately.

A Typical Business Case Table of Contents:

- Business Overview and Problem Description
- Description of the Proposed Solution / Project
- Benefits
- Option Analysis
- Implementation Plan & Timeline
- Risk Analysis
- Organizational Impact
- Financial Impact
- Call to Action

Business Overview and Problem Description

This section of a business case describes the current situation facing the business -- the reason the project is being considered. In preparing this part of the business case, you need to provide answers to the following questions:

- What has occurred within the environment that brought about a new situation or created this problem?
- What does this new situation demand?
- Why is this significant to the organization in terms of its employees, customers and/or competitive advantage?
- Why should this project be considered at this time?

Example
For purposes of illustration, let's assume our company, after looking at its occupancy and space utilization statistics, wants to embark on a Spring Cleaning project in its headquarters building. The Problem Description for the business case might be described as follows:

In response to the changing economy, our company has experienced staff reductions, implemented a remote work program, and outsourced several planning functions. These initiatives have reduced the number of staff at our headquarters office, resulting in many vacant offices and cubicles. These work areas still contain IT equipment, office supplies, furniture, and files that we need to reassign or dispose of. In addition, the new work teams that have been created are not in adjacent spaces and the difficulties of collaboration are impacting productivity at a time when we must focus on the most efficient work processes.

One additional factor that supports our recommendation to move forward with a Spring Cleaning program is the fact that our outsourced planning teams need temporary space when working with us in the office. The conference rooms have become storage rooms for excess furniture and file boxes. The reason it is important to initiate this project now is the fact that our lease agreement for the headquarters space is due to expire, and we have an opportunity to save money by consolidating and better utilizing space.

You can see how this overview has addressed the significant questions identified above. To make this section more meaningful, you could include statistics on the number of staff reductions and worker relocations that have occurred. Another way to help illustrate your position is to include a floor plan that shows the newly vacated space, lack of contiguous space for various work groups, and non-functioning conference rooms. The adage, "a picture is worth 1,000 words" is very appropriate when preparing a business case.

Description of the Proposed Solution / Project

This section of the business case will describe the solution being proposed. It should include details regarding the resources required (both internal and external), as well as the desired approach to implementation, leadership and governance, and a clear statement of the final deliverable. Project goals and ways in which success will be measured are another crucial part of this section. In addition, it is important to identify the scope of the project – what is covered by this solution and what is not.

Answering the following questions will guide you in preparing this section:

- What is our approach for solving this problem?
- Which departments will be involved in the planning of this project?
- Which departments will be involved in the execution of this project?
- At the end of this project, what will be delivered?
- What is included in this project? What, specifically, is excluded?

Example:
Carrying on with our example of the "Spring Cleaning Project," our Solution Description might be as follows:

We have investigated several ways to solve the space utilization problem and have concluded that the best approach is to use a combination of internal and external resources. We will ask each department to assign a resource to our planning team. This planning team will identify, contact, and contract with a recycling firm, a

furniture and equipment reseller, an off-site file storage firm, and a community group who will accept donations not suitable for recycling or sale. The headquarters building is the only facility to be included in this project at this time. Our planning team will develop the plan, including how we will inventory space, identify excess equipment and office supplies, work with department leaders and end-users to define files that can be disposed or stored off-site, The execution of the project will be lead by our Program Management office.

Benefits

This section presents the benefits to be gained by completing this project. These benefits may be described from the initial chart that was developed when the idea first surfaced, such as those identified in Chapter One, or from a new matrix. In discussing the benefits, it is important to be as realistic and as quantifiable as possible. It is also important to describe the benefits from a client or end-user perspective. As with the costs, it is important to show how the benefits will be realized over the course of the project.

For example, in our Spring Cleaning project, one of the first steps will be to perform a space inventory. While completing this inventory is important to the project, it may also provide an immediate benefit by providing information that can be used today in updating cost allocations.

Typical questions that should be answered in this section include:

- What is the benefit of this project in terms of supporting the business strategy and operational activities?
- What are the direct – and indirect – benefits:
  - ♦ To the business units?
  - ♦ To the employees?
  - ♦ To the various vendors and service partners?
  - ♦ To senior management?
- How does this initiative provide a competitive advantage to our company?
- How long will this advantage remain?
  - ♦ Will some of the benefits be realized before the project is completed?

One way to start thinking about benefits is to consider how your project does the following things:

- Reduces costs;
- Avoids new costs;
- Reduces risk;
- Provides better compliance with internal or external policy and regulations;
- Improves work processes and reporting processes.
- Enhances customer satisfaction;
- Provides a competitive advantage;
- Improves internal and external communication; and
- Improves employee satisfaction, recruitment or retention.

Example

In our Spring Cleaning example, the Benefit Statement will include the following ideas:

- Recapturing and/or optimizing existing work space
- Reducing file storage requirements
- Recycling / reusing equipment
- Focusing on workplace safety
- Recovering the investment in IT and office equipment through a charitable donation or resale
- Providing an opportunity to update / revisit space standards
- Providing an opportunity to update / revisit CAFM system data and cost allocations
- Realigning business unit adjacencies for more effective work processes and communication

Options Analysis

This section of the business case presents the various ideas that have been proposed as solutions to the problem. Typically, some of the initial ideas that surface are not explored in any great detail, but many of them do warrant further review and investigation. It is important to share your thought process and the alternatives that were considered to reach a solution.

Notice that the first option presented in the example is the "Status Quo." Many times we forget to include this option, thinking that not making a decision is not significant. However, not making a decision really means making a decision to keep things as they are. And sometimes that decision is actually significantly less attractive than other options!

Figure 1: Option Analysis for a new IT Network

Option 1: Status Quo		
Advantages	***Disadvantages***	***Consequences***
Low Cost	Not Reliable	Remote sites struggle with "up time" and connecting to the corporate office
Provides remote access through VPN	Not secure	Risk of intrusion or hackers, loss of confidential information
	No central management capability	Each remote site must be managed individually
	Low bandwidth	Data processing activities take too much time
Option 2: New Network		
Advantages	***Disadvantages***	***Consequences***
Guaranteed up time of 99.99%	Upfront equipment cost	Network always on, productivity increases
Greater security		Private network that only authorized employees can access
Ability to provide central management		Provides access to remote equipment to trouble shoot
Increased bandwidth	Higher costs	Increases speed and efficiencies

Source: iNPOINT Advisors, LLC

Describe the initial ideas that were proposed to solve the problem and which of those ideas were selected for additional analysis. Based on this review, identify how those options compare with each other. A good way to present this information is in a table, such as the one shown above, it describes the options being evaluated and then identifies the pros and cons of each one. It is important to keep reminding yourself to use terminology that is easily understood and makes sense to your particular audience.

As an exercise, create a similar Option Analysis for our example project of Spring Cleaning. What would you identify as the "costs and benefits" of not taking any action?

Implementation Plan and Timeline

This section of the business case outlines the high-level steps you will take to execute on your project and the timeline for completing those tasks. Once you get the green light on your project, you will develop a more detailed timeline and implementation plan. The focus here is to identify the key activities and expected time durations for each major task. Even though this timeline is presented at a high level, you must take time to develop your estimates with accuracy. Where there may be some concern or question about the time estimates, make sure you include those thoughts in your business case.

As you develop this implementation plan, remember that small, less complex problems may be solved by a simple set of tasks and activities conducted sequentially. However, more complex problems may require accomplishing the work in phases to achieve the solution. Thinking of projects in phases sometimes makes it easier to describe the activities, the deliverables or output, costs and benefits, and approval process.

The questions that will guide you in creating the plan include:

- When will the project start and end?
- What are the key activities that must be performed?
- What are the major milestones and deliverables?
- Is this project going to be completed in phases? If so, what are those phases?
- What factors could influence my time estimates? Are these critical? If so, should additional research be performed?

Figure Two: High-level Implementation Plan

Phase 1: Preparation and Launch

Description	Develop the project plan, engage the project planning team, identify and engage all users, communicate project expectations with all stakeholders
Key Activities	Update and validate Document Management and Retention policies Contract with external vendors Develop communication plan, including memos, banners, posters
Estimate Variables / Concerns	Need to engage all department heads and legal in review of policies Need to identify a key resource in procurement to work with this project from beginning to end
Total Elapsed Time	8 weeks

Phase 2: Project Execution

Description	"Get to Work", spending one day in each of the 8 affected departments/work groups.
Key Activities	Perform "Day Before" activities, including walk-throughs Perform "Day of" activities, including staffing staging areas and control areas and working directly with group area leaders
Estimate Variables / Concerns	Availability of end users
Total Elapsed Time	2 weeks

Phase 3: Wrap-up and Evaluation

Description	At the end of the project, we will engage all the participants in a session to evaluate our successes
Key Activities	Obtain final cost and return information from accounting Measure impact on: Environment → Recycling Social → Improved working conditions, contributions to charitable organizations Financial → Optimized space, revenue from sale of used equipment, reduced file storage costs
Total Elapsed Time	2 weeks

Source: iNPOINT Advisors, LLC

Risk Analysis

This section identifies any issue that might impact your ability to complete the project successfully. To develop a risk profile for your project, look at each of the areas of potential risk outlined below and determine whether it applies to your project. If so, identify the probability of the problem occurring and define its potential impact. Doing this analysis also helps you understand and describe any critical assumptions you may have made about the project. As you have no doubt experienced, overlooking your unstated (and often unrecognized) assumptions can sometimes be fatal to a project.

Typical Areas of Risk:

- Availability of key resources
- Vendor performance
- User resistance to the proposed change
- Schedule overrun
- Budget overrun
- Scope creep
- Lack of executive sponsorship

As an exercise, identify any assumptions and risks that you see might be part of our Spring Cleaning project.

Organizational Input/ Impact

In this section, you are describing who has helped developed this idea and initiative, and how that input was solicited and incorporated into the final design. This discussion will lead to, and support, the decision of who is best suited to carry the project forward. In other words, you are helping to define who will have responsibility for managing the project, working on the project, or providing oversight to the project. It is also in this section where you are describing the impact that this project will have on the organization during the time it is being implemented. Questions to be answered:

- Who initiated this idea and who has helped develope these approaches and options?
- Who has been involved in defining the problem and working through to the solution?
- What type of internal resources will be required?
- What type of external resources will be required?
- Who will be performing the project oversight and quality control?
- What will be the impact on employees during this project?
- Is there a need to provide external support during the project execution phase? If so, will this staff be working on the new project? Or will the supplemental staff be picking up the routine work so that full-time employees can be engaged in the new project?
- What facilities and resource requirements will be required to implement this project?
- What facilities and resources will be required to manage this project following execution?

Figure Three: Spring Cleaning Organizational Impact

Phase	*Planning Team – Internal*	*Execution Team – Internal*	*Execution Team – External*	*Organizational Impact*
Preparation Phase	*2-4 hours/ week*	*Minimal*	*2 hours / week*	*Minimal*
Execution Phase	*Full-time for one day in their work group area*	*Full-time for one day in their work group area*	*TBD*	*One day of activity in their work area*
Phase 3: Wrap-Up	*Minimal*	*Minimal*	*Minimal*	*None*

Source: iNPOINT Advisors, LLC

Financial Impact

This is one of the most important sections of the business case—and it's one that may require special skills to complete. Because of that, you would be well-advised to work with someone in your accounting or finance department. Their expertise can help you format this part of the business case, test your assumptions about the actual costs and benefits, and validate the timing of those costs and benefits. In addition, these folks will have a good understanding of what is currently being funded and how those commitments may impact the probability that your project will be approved. A strong financial impact section will include tables, charts, and graphs that describe the costs versus the benefits of a project today and over the life of the project.

Begin work on this section by asking:

- What costs are involved in implementing this solution? Are these costs one-time costs or will these costs be part of on-going operations moving forward? Typical costs to consider include:
  - One Time costs
    - Internal employee salaries
    - Temporary employee expenses
    - External consulting fees
    - New hardware / software costs
    - Legal Fees
    - Facility use costs
    - Additional computer costs
    - Other new equipment costs
    - Training and documentation costs
  - Ongoing costs
    - Recurring service contracts
    - New staff
    - Additional equipment maintenance
    - Additional facilities costs
- Do I need to include "soft" costs, such as the payroll costs of internal staff or just the "hard" costs?
- Can I quantify the benefits to be received for this project. If so, how ?
- What financial analysis tools are most commonly used in my company for evaluating projects and investments?

The typical types of benefits have been identified in the Benefits section of this chapter. Here are some tips to quantify these benefits:

- Lowering operating costs – identify the current cost and the savings that will occur with a new process, vendor, or equipment installation
- For savings due to improved work processes, calculate the expected savings by multiplying the hours to be saved by an average salary/benefit rate. Translate these savings into the number of FTE's (full-time equivalent) positions that could be saved.
- Reduction in cycle time that could result in additional revenue because you are quicker to get to market, faster time to bill clients and process discounts on vendor invoices, for example.
- Decrease in employee turnover or an increase in employee retention
- New market share because of a new competitive advantage
- Reduced compliance risk, which may save on fines or penalties

The most typical ways in which costs and benefits are evaluated include:

- Payback analysis – This is an easy way to understand the value of a project by determining how long it will take to realize a return. In other words, when will the project pay for itself? The downside of this method is that it does not consider the cost of money or the time value of money.

Your Accounting/ finance team may ask for an ROI calculation or an Internal Rate of Return. Look to them for help!

Figure Four illustrates how you can present the cost information that you have gathered. Figure Five illustrates how you can present the benefit information that you have gathered.

Figure Four: Presenting Cost Information

Figure 4: Cost Template

Cost Area	Hours	Hourly Rate	Annualized Costs	FTE Increases
One-Time Costs :				
Internal EE time	300	25	$7,500	
External Consulting			$15,000	
Temporary Staff for fill-in activities	100	15	$1,500	
Training Costs			$6,000	
Total One-Time Costs:			$30,000	
Capital Costs:				
New Equipment			$50,000	
Ongoing Costs:			None	
Total Project Costs			**$80,000**	
Source: iNPOINT Advisors, LLC				

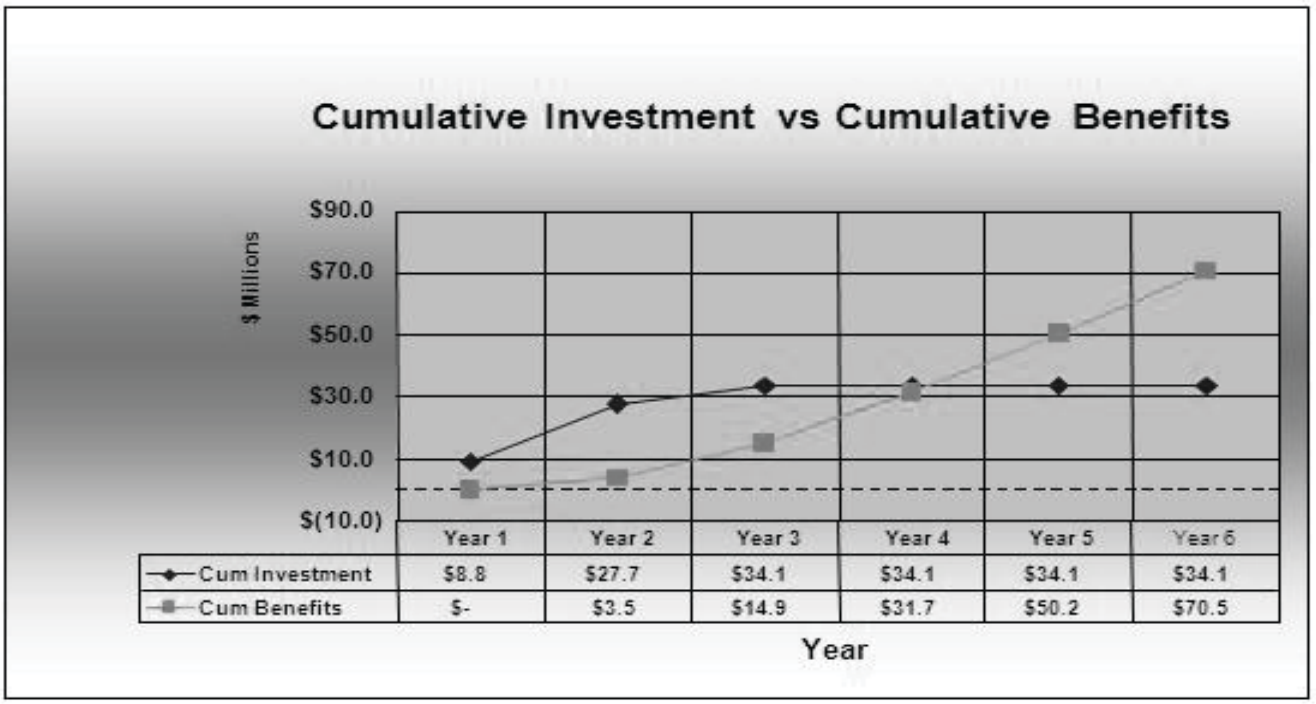
Figure Five: Presenting Benefit Information

Figure 5: Benefit Template

Benefit Area	Hours	Hourly Rate	Annualized Savings	FTE Savings
Employee savings through process improvement	1,000	25	$25,000	3
Reduction in cylce time resulting in faster new store openings			$15,000	
Decrease in energy costs			$15,000	1
Decrease in vendor service contracts			$2,500	
Miscellaneous			$5,000	
Total Project Costs			**$62,500**	4
Source: iNPOINT Advisors, LLC				

Once the costs and benefits have been calculated, you can plot these values into a graph that illustrates the length of time before "payback." The example in Figure Six was prepared for a company evaluating the implementation of a new accounting and operations control system. While not directly applicable, it does provide a nice illustration for presenting the costs and benefits that will occur over time.

Figure 6: Comparison Graph



Source: iNPOINT Advisors, LLC

Call to Action

This is the summary of your business case. In this section, you define the recommendation and outline the next steps. This can be simply stated by answering the following questions:

- Why do we need to do this project?
- When does it need to happen?
- What is the financial impact?
- How do we get started?

In our Spring Cleaning project, the Call to Action is quite simply stated: Our recommendation is to begin this project as soon as possible. We desperately need to reconfigure space to improve work process, employee productivity and data file storage and recapture. The vendors who will be assisting in the project will be paid by the reclamation value of the furniture and equipment and paper recycling. We will also maintain good relationships with our favorite charity by donating excess materials that cannot be sold or recycled. The remaining costs involved in this project are minimal and will be offset by the increased productivity of a redesigned workspace. We would like to hold a kick-off meeting in two weeks. We are providing a list of the project employees to be involved on the Planning Team.

Section Two: Selling the Business Case

This section will include a discussion of the factors involved in being able to "sell" the business case.

Knowing your customer

Getting a "Yes" is all about selling, and successful selling starts with knowing your customer. This process starts with identifying the participants in the "sales transaction" and the role(s) they will play. For example, will the decision to move forward be made by a single individual? While the authority for the final decision may rest with one person, will that person seek advice and counsel from others in the firm? Or is the decision likely to be made by a committee? Knowing who has the ability to influence the decision is equally as important as knowing who will actually make the decision.

Remembering that the decision-maker is a person is important to successful selling. Understanding that person's style, tone, business focus, risk index (innovative, or tried and true) will help you tailor your presentation.

Remember also that each person in the process has both individual and organizational goals. Recognizing and understanding those goals and values will help you target your ideas. One old adage to remember is "Don't try to get what you want; help other people get what they want." And another is, "People love to buy, but hate to be sold," so be sure to find ways to reinforce their buying decision, keeping in mind the purpose for the project/initiative and how that will make a difference to each individual.

Understanding the Business Drivers

The primary business driver for most companies today is cost control. Other equally important drivers include customer service, health and safety, sustainability, and employee satisfaction. Identifying how your proposal impacts each of the top three or four key business drivers is critical to getting to a "Yes." One caveat to keep in mind is that the formally stated business drivers are not necessarily the actual business drivers. Make sure you understand and address the real factors that drive decision-making. And remember that you may need to go through this thought process separately for each and every decision maker.

Making the Benefits Tangible

You've done a lot of work on the benefits statements and analysis, so now you need to make them real, easily understood, and extremely important to the buyer(s). Think about how you respond to folks who are trying to sell you a new car. If they know that "mpg" is more important to you than color, their sales pitch will be different. And if they also understand and can meet your financing objectives, they are one step closer to a deal.

Emphasizing Your Understanding of the Risks and Mitigation

No project is without risk; in the selling cycle, make sure you disclose and discuss the risks up front. Doing so enhances your credibility and, thus, the viability of your project. A strong offense is the best defense, so make sure the people in the approval process know that you are aware of both the best-case and worst-case planning scenarios.

Assessing Organizational Readiness

It is critical for you to understand the level of awareness in your organization for the type of project you are recommending. In some cases, your first job may be to educate your decision-makers on the type of projects and big-picture benefits before you begin to sell the attributes of a particular project.

Section Three: Presenting the Business Case

You now have all the information you need to present your business case. Here are some tips to make that presentation most effective.

Prepare an Executive Summary that outlines the major points you want to address in your presentation. Write out the "speech" that you will deliver. From those notes, create a powerful visual presentation. Effective slide presentations limit the content on each slide to three or four bullet points that outline the key messages you want people to remember. When you deliver the presentation, talk to these key points, but do not read them word-for-word. Begin with your conclusions, follow with the costs, and end with your recommendation.

Deliver your hand-out in advance of the presentation. Make sure that you invite people to contact you with their questions prior to the meeting. Use those questions to fine-tune your talking points. Make your back-up documents, such as the detailed option analysis, vendor comparisons, and due diligence checklists, available upon request.

When you prepare your agenda for the meeting, *speak to your formal presentation for only about 50-60% of the time you have*. Use the rest of the time to engage your audience in an interactive conversation where you respond to questions, explore concerns, and reinforce your key selling points.

Use your emotions to convey your passion about the project. Don't react directly to any objections that are be raised during your presentation. But do respond to questions about basic facts or possible outcomes.

Understand that there is always give and take in the negotiation process, and it's likely that your negotiations have just begun.

Prepare responses to questions that you think will be asked. Go back over any special measures or calculations that have been developed as well as any special concerns.

"Test drive" your presentation with your team. Get them to ask questions and to play devil's advocate. If possible, test-drive the presentation with one of the decision influencers.

Make sure the accounting and finance departments have signed off on the financial analysis and your presentation of it.

Finally, remember to take time to *listen* and to *breathe!*

Ready, aim, fire! Now you have the blessing of management. But we're not quite done. As they say, the devil is always in the details. So we will close our adventure with details about how to take an approved idea and go make it happen. As you read the upcoming last chapter and plot your next moves, bear in mind that this whole sustainability issue is really a process.

And as you are busily implementing all these great recommendations we can guarantee you'll be hit with another innovative set of "must-do" good ideas. So we're closing out with some advice on monitoring your own performance. The real secret to sustainability is the ability to learn from your current experience so you'll be more than ready to start the process all over again.

References

Business Case Primer, Impact Technical Publications, Copyright 2006

Life-Cycle Cost Analysis (LCCA), Sieglinde Fuller, National Institute of Standards and Technology, Whole Building Design Guide, update as of 12/03/08

The One Minute Sales Person, Spencer Johnson, M.D., Avon Books, New York, New York, 10019.

Project Justification: Tips for a Successful Business Case, White Paper from gantthead.com, Copyright 2007

Promoting Projects When Budgets are Slashed, Bob Weinstein, White Paper from gantthead.com, Bob Weinstein, July 20,2009.

ABOUT THE AUTHOR

Georgia Perkey
Managing Partner, iNPOINT Advisors

Ms. Perkey is a seasoned business leader who has a unique background that includes both internal and external executive level positions. Her experience has included roles as Vice President of Operations, Chief Information Officer, and Senior Managing Director of Strategy Consulting. In these roles, she has focused on solving operational and management problems by better utilizing people, process, and technology. She has a solid track record in effectively identifying and managing organizational change from the idea through to its execution, and has authored several methodologies in Program, Project and Change Management for industry groups and companies. Through her work, she has earned a reputation as a strong business leader, change agent and group facilitator – creating positive energy around operational, organizational, and technology change at all levels within an enterprise.

Ms. Perkey has worked for companies in Real Estate, Financial Services, Health Care, Retail and Hospitality, Engineering and Construction. Some of her client and company associations include Earth Tech (a division of Tyco International), CB Richard Ellis, PricwaterhouseCoopers, Ernst & Young, California Pizza Kitchen, GMAC Commericial Mortgage, Washington Mutual, Bank of America, BRE Properties, PacTel Properties, Mellon McMahon Asset Advisors, Blue Shield of Northern California, Allegis Realty Investors, Glenborough Realty Trust, Kaiser/Permanente Health Care, University of California Medical Center.

Ms. Perkey's education includes an MBA in Business Analysis and Information Systems from California State University at San Francisco. She has been an active participant in the real estate industry since 1983. She has served the organization for Commercial Real Estate Women in its early years with leadership positions at both the local and national level. For CoreNet Global, she headed the "Technology and the Web" research tract of the CoreNet Global 2010 Research project. She has also been an active contributor to IFMA, BOMA, and IREM in terms of speaking and writing.

Ms. Perkey also believes in supporting her community. Her current commitment is as a Board member on the Foundation of the Los Angeles Biomedical Research Institute, serving as the Chair of the Discovery Showcase. She is also the Program Chair for the Organization of Women Executives.

Currently, Ms. Perkey is the Managing Partner for iNPOINT Advisors and can be reached at gperkey@inpointadvisors.com

11 Chapter Eleven:
Making it Happen

Here we are: the last chapter of this long learning journey. Your boss has just said, "Go do it." Now what? Well, as you might expect we do have some suggestions along that front. We have deliberately pushed the envelope a bit throughout this book, including offering what we believe is some very sage advice on how to make it happen. We have found in many other instances that authors often do a great job of telling you what should be done, but offer little advice on how to actually do it. We're doing our best to break that mold here.

Once again we have enlisted Georgia Perkey to help out with this final step. As someone who has spent most of her professional career making things happen, she is clearly very well-qualified to help you get over this last hurdle. Enjoy—and go do it!

Georgia Perkey
Managing Partner, iNPOINT Advisors

The Idea in Brief

After reading to this point, you no doubt have surfaced many ideas about initiatives that will help you cut costs and/or become more efficient and effective. Now you must execute these ideas, and you face questions that are multiple, complex, and inter-related. Those questions include:

- Which initiatives make most sense in terms of cost, time to execute, complexity, and resource availability?
- How do I prioritize these initiatives—and what's the impact on my organization in terms of resources (money, people, and time)?
- How do I structure, staff, and organize the projects?
- How do I monitor performance and progress?
- How and when do I communicate to senior management—and all the other stakeholders?
- How do I create a culture of change?

Getting the right answers to these questions at the right time can be tricky. We are living in turbulent times, and speed to change is the difference between success and failure. However, the old adage, "Haste makes waste," is still applicable—as is an old real estate standby: "Measure twice, cut once." So while we must move quickly, we must do so with care and deliberation. And we must do so in a way that clearly identifies what changes are being recommended, how those changes will be implemented, when the change will occur and who is responsible for ensuring success. It's time to "Plan the Work and Work the Plan."

The good news is that there exists a body of knowledge around Project Management, Program Management, and Change Management that can help you get started. The value of implementing these three disciplines in your organization has been proven and reported many times in many different sources. A research study cited in an article titled the "Evolution of Project Management" by Sandro Azzopardi (published by Pitman Training) indicated that "85%-90% of projects fail to deliver on time, on budget, and to the quality of performance expected."[1]

Azzopardi cited several reasons for this dismal picture, including:

- Lack of a valid business case;
- Objectives not properly defined and agreed;
- Lack of communication;
- Lack of stakeholder engagement;
- Outcomes and/or benefits not property defined in measureable terms;
- Lack of quality control; and
- An insufficient planning and coordination of resources.

[1] http://www.pmhut.com/the-evolution-of-project-management

Project and program management methods improve the probability for successful project execution by providing a structure to address issues by:

- Providing real-time, actionable information to all levels of staff and management;
- Ensuring that milestone dates are clearly visible;
- Identifying organizational accountability;
- Clearly identifying and engaging stakeholders and senior management, project owners and program participants;
- Gaining consensus on goals and measurable objectives;
- Presenting valid plans that describe time and resources and expected deliverables;
- Involving and engaging users through communication and training;

The goal of this chapter is to introduce ways to ensure that the expectations of the company are closely aligned with the reality of the result. Too often, disappointment arises from the gap between expectations and reality. This disappointment distorts the actual value of the project and its ability to add value in the future. The disappointment also impacts the credibility of moving forward with similar projects and initiatives. It is thus critical to understand and manage the risk by minimizing this "Expectations Gap".

This chapter will present the concepts involved in each of three key methodologies – Program Management, Project Management and Change Management – and describe several specific tools and templates that can be implemented to help monitor and manage your progress. These management tools provide action steps that focus on:

- Identifying and managing risk and reward
- Engaging Stakeholders
- Aligning business strategy and leadership
- Addressing organizational change

Turning Ideas into Projects

Let's begin our discussion with some definitions. A project is defined as any temporary, one-time activity undertaken by a company for a specific reason to produce a specific, and, hopefully, measurable result. A project can be of any duration, but will have a clearly stated beginning and ending date and will be performed by a team that is formed for that specific purpose. The team may be one individual, several people within one department, or a team comprised of staff that cross many functions in an organization. The project team may also include participants from outside the company.

Project management is defined as the way in which companies apply discipline to starting, executing, and delivering the expected results.

Program management is defined as the management of outcomes and strategy. This is different than project management which focuses on managing outputs and tactics. For example, a building project delivers a facility. A building program delivers working environments aimed at improving productivity. To us, the significant difference and value of a program approach is its ability to reduce the costs involved in coordination, risk, and resource conflicts.

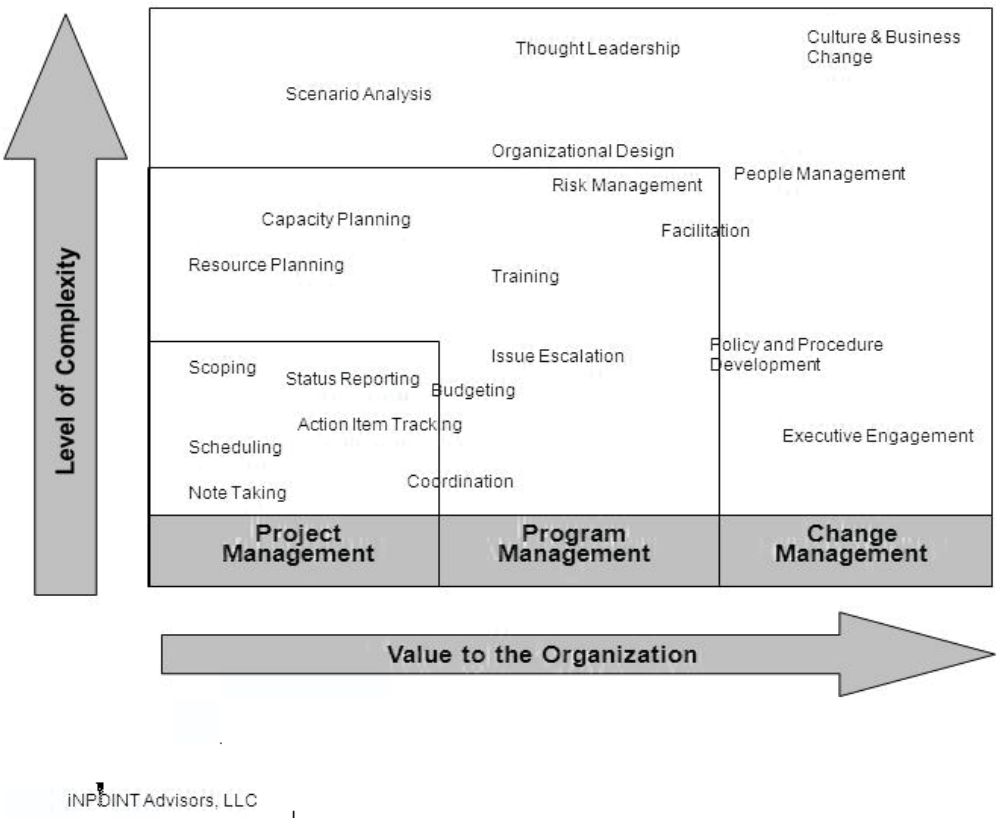
For example, a company might initiate two projects – one project focused on replacing lighting fixtures and another project aimed at installing sensors for automatically controlling the lights in conference rooms. Both projects are focused on the program outcome of energy reduction, but the two projects have different goals and outputs. Applying a program management view to both of these projects will ensure that there are no conflicts between the resources and budget dollars assigned to each of the projects. It will also identify the appropriate sequence of tasks between the two projects, For example, making sure that the light fixtures in the conference room are installed before the sensors is important. Program Management also puts in context the benefits that can be gained by integrating and leveraging projects.

Change management is defined as the way in which change is introduced to employees so that a successful

assimilation can occur. It is the structure and the process by which companies help affected individuals understand and participate in the change so that they, and the organization as a whole, are successful in the transition.

The majority of this chapter will relate to Project Management. It is in this area that we can make the biggest difference most quickly. However, many of the activities and tools introduced in this section can and should also be used in managing programs and organizational change. Therefore, when you master project management, you will be equipped to use those skills in your program and change management activities. The overlap in activities is depicted in the chart presented in Figure One, which defines some of the key activities performed in each of the areas of Project Management, Program Management, and Change Management.

Figure 1: Activity Integration Matrix



iNPOINT Advisors, LLC

As an exercise, highlight in this matrix the activities you are currently performing in each of these area listed. Evaluate where you are being successful and where you have an opportunity for improvement. Then use the ideas in this chapter to reinforce what you are already doing or to figure out more effective ways to handle these tasks.

Section One: Project Management

As you can guess, some companies have a structure for project management and some do not. As you might also guess, companies or groups that implement a more formal process for managing projects enjoy a higher probability of success and achieve their desired outcomes much more consistently. This section will describe some of the key features of a good project management structure; these ideas can be implemented on a large scale or on a small scale. Obviously, a smaller project may require less management, but can certainly follow the same basic structure.

For example, a small project may only require a statement of work that includes a simple budget, a checklist of key milestones, and list of five to ten discrete activities. Larger project and projects that involve multiple departments generally require a more thorough project charter, detailed project budget and project plan, and more formally structured project status meetings and communication plans.

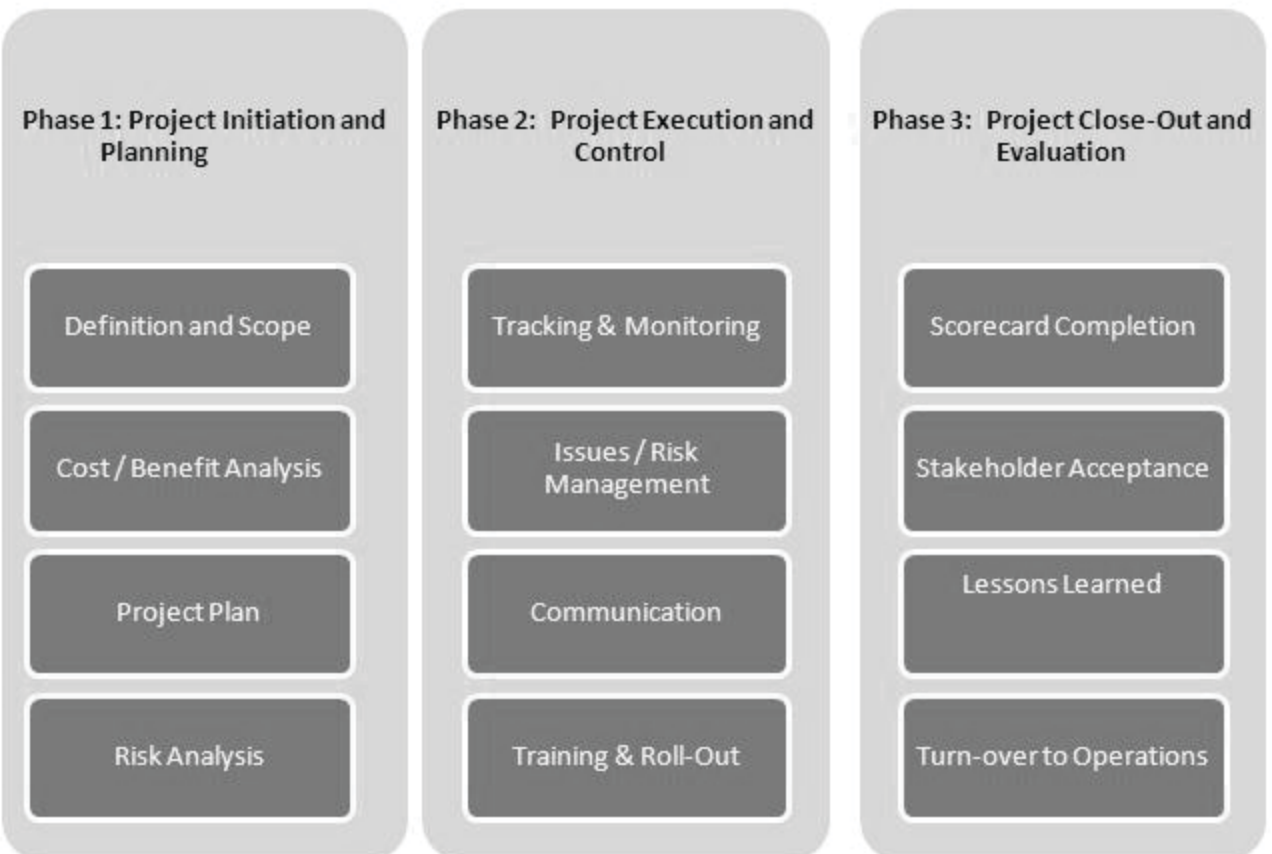
As you read through this chapter, make notes on what you think would be most helpful to manage projects effectively in your own organization. The most important principle by far is to follow some structure from project initiation to project conclusion. If this structure is consistent from project to project, you will be able to leverage many activities from one project to the next.

The three primary Phases of Project Management as shown in Figure Two are:

1. Project Initiation and Planning
2. Project Execution and Control
3. Project Close-out and Evaluation

The activities in each of these phases are described in the following paragraphs.

Figure 2: Project Management Phases and Key Activities



Phase One: Project initiation and Planning

Definition and Scope. As you know from Chapter One, all projects start with an idea—an idea that will create change within the organization by providing a new service, product, capability, or process improvement. The first step of any project is to gain clarity about the request: who made the request, and for what purpose; what's the expectation of a result; who "owns" the project; and who will be participating in the project.

Gathering data means asking the questions that can lead to an understanding of size, scope, resource involvement, and end results as well as how the change will be implemented. This process also includes identifying any risks associated with enabling the intended change and a discussion on how those risks will be managed and monitored. Most importantly, it includes listing the Critical Success Factors—the measurements that will be used to determine if the initial goals were accomplished.

The deliverable of phase one is a Project Charter or Statement of Work. A sample project charter is included in Figure Three.

Figure 3: Template for Project Charter / Statement of Work

Section	Description of Contents
Background	Reason(s) why this project is being recommended
Project Goal	Big picture outcome(s) expected from this project
Project Scope	Size of project by functional areas to be included, people that will be involved, geographic reach
Project Objectives	Specific components of the goal that can be measured and tracked
Project Deliverables and Milestones	Highlights of the project plan in terms of : Milestone Planned Completion Dates _____ _____
Project Score Card	Listing of Critical Success Factors (CSF) – those achievements that will signal the degree of success and identify the benefits in a quantifiable way
Key Assumptions	Any assumptions being made about how the project will be executed including timing, resource allocation (both internal and external), employee participation, management support and executive sponsorship
Key Stakeholders & Roles	List of who will be involved in the project, by role and responsibility with assumption about time allocation Stakeholder Role Responsibilities Time / week or month _____ _____
Constraints	Any limitations that must be included in the project planning, such as budget limits restrictions of use of staff or other company resources, etc.
Issues / Concerns / Risk	Any concerns or risk factors that need to be specifically monitored and managed during the course of the project. An example would be the availability of the executive sponsor or the timeliness of the procurement process
Costs and Expected Duration	High-level overview of the Project Plan and Project Budget

Project Cost/Benefit Analysis. The matrix, shown in Figure Four, provides a way to capture information and estimates of the high-level costs and value of a project.

Figure 4: Cost / Benefit Matrix

Costs	1	2	3	4	5
Time to Implement	<1 week	>1 week to <4 weeks	>1to 2 months	>2 and <6 months	> 6 months
Complexity	NA	Minimal	Moderate	Major	Dramatic
Staffing Requirements	1	2 to 3	4 to 5	6 to 7	> 7
Equipment Costs	0	$1 to $15,000	$15,001 to $50,000	$50,001 to $200,000	>$200,000
Consulting Costs	0	$1 to $15,000	$15,001 to $50,000	$50,001 to $200,000	>$200,000
Incidental Project Costs	0	$1 to $15,000	$15,001 to $50,000	$50,001 to $200,000	>$200,000
Other Costs	0	$1 to $15,000	$15,001 to $50,000	$50,001 to $200,000	>$200,000

Benefit	1	2	3	4	5
Cost Reduction	Negligible	< $50,000 per year	$50,001-$100,00 per yea	100,001-$250,000 per ye	>$250,000
Impact on Corporate Strategy	Negligible	< $50,000 per year	$50,001-$100,00 per yea	100,001-$250,000 per ye	>$250,000
Revenue Increase	Negligible	< $100,000	$100,001 to $250,000	$250,001 to $500,000	> $500,000
Risk Mitigation	N/A	Minimal	Moderate	Major	Dramatic
Compliance	N/A	Minimal	Moderate	Major	Dramatic
User Productivity / Satisfaction	N/A	Minimal	Moderate	Major	Dramatic

Source: iNPOINT Advisors, LLC

As you can see, the cost/benefit matrix is designed to assess the attributes of each project from low to high cost and complexity as well as from low-to-high benefit and value. Of course, this template must be customized to reflect the minimal cost sensitivities and financial values for each company.

Maintaining consistency in your matrix from project to project makes it easier to evaluate and prioritize projects across the enterprise. This tool is not intended to be a budget or a business case analysis; however, it does provide critical information during the decision-making process. For some companies, a preliminary review occurs after the completion of the Project Charter and Cost/ Benefit analysis and before the development of the detailed project plan, budget, and risk matrix. These latter activities take time and require input from many different sources.

As you review this matrix, think about the thresholds your company might apply to cost reductions or revenue generation. For example, is $500,000 a year significant, or does your company want to describe significant projects as those that produce more than $1,000,000 a year?

Project Plan. A project plan is developed to identify detailed activities that must be undertaken, the sequence in which those actions must occur, who will be performing each activity, and the estimated duration of those activities. In addition, the project plan identifies clear milestone dates and quantifiable deliverables. Developing this plan may seem cumbersome, but the plan becomes the guide for daily work as well as for monitoring and managing progress.

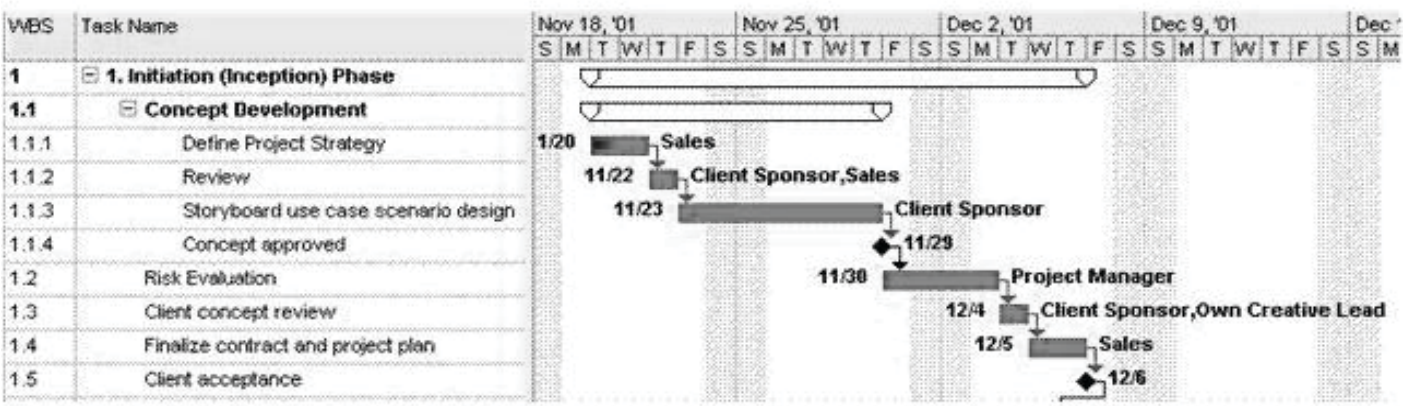
An important mantra for project managers is “Plan the work and work the plan.” This principal is as important for small projects as it is for large projects although the format and level of detail will be different. Larger, more complex projects will have more activities and more activities that have dependencies – meaning one task must be completed before the next task can begin. These projects are more easily managed using programs such as Microsoft Project®. For smaller projects, tasks can be managed using Excel® worksheets. Templates for project plans are shown in Figures 5 and 6.

Figure 5: Small Project Plan Template

Status	Priority	Assigned to	Due Date	Revised Date	Activity Description	Status/ Comments
Open or Closed	Low Medium High					

Source: iNPOINT Advisors, LLC

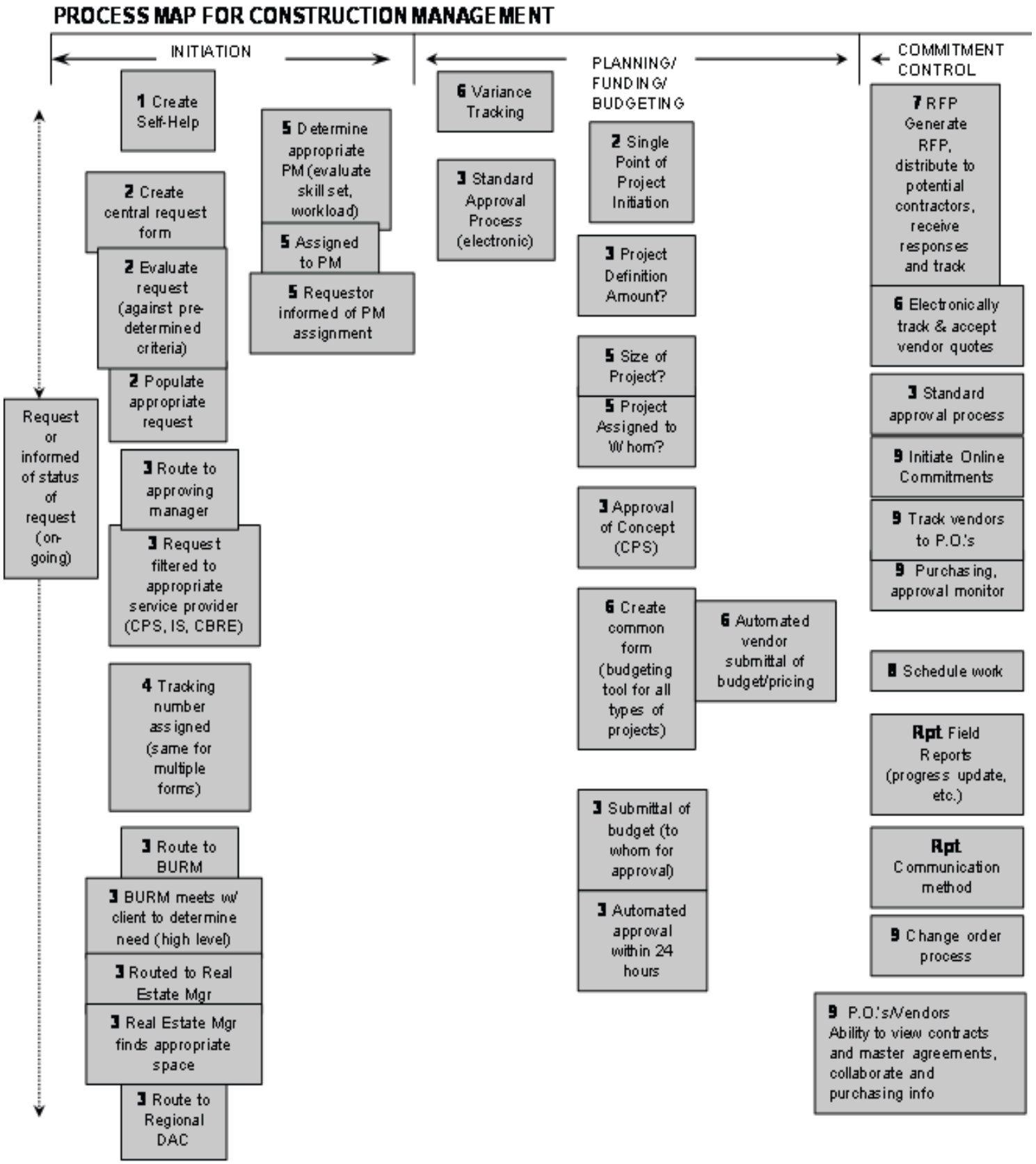
Figure 6: Project Plan Template from MS Project ®



Courtesy of: www.wilsonmar.com/1projplan.htm

To complete either of these types of project plans, you must start by defining each small, discrete action step. This creates your framework, which is called a Work Breakdown Structure, or WBS. A WBS defines what you are delivering for the project by detailing each single step and then sequencing those steps.

A simple way to develop a WBS is to gather the project team together and begin to describe the steps needed to reach the goal. Usually, this process begins with the big picture and becomes more detailed as the conversation develops. A good way to track the discussion points is by using Post-It® notes. For each activity that is discussed, complete a Post-It® note. Then start putting all the notes in their sequence of occurrence. The results of this first pass become the first draft of your project plan. A sample of the output of this type of brainstorming is seen in Figure Seven. (This plan was developed to depict the steps needed to build a new facility.)


PROCESS MAP FOR CONSTRUCTION MANAGEMENT
INITIATION
PLANNING/ FUNDING/ BUDGETING
COMMITMENT CONTROL
1 Create Self-Help
2 Create central request form
2 Evaluate request (against pre-determined criteria)
2 Populate appropriate request
3 Route to approving manager
3 Request filtered to appropriate service provider (CPS, IS, CBRE)
4 Tracking number assigned (same for multiple forms)
3 Route to BURM
3 BURM meets w/ client to determine need (high level)
3 Routed to Real Estate Mgr
3 Real Estate Mgr finds appropriate space
3 Route to Regional DAC
5 Determine appropriate PM (evaluate skill set, workload)
5 Assigned to PM
5 Requestor informed of PM assignment
6 Variance Tracking
3 Standard Approval Process (electronic)
Request or informed of status of request (on-going)
2 Single Point of Project Initiation
3 Project Definition Amount?
5 Size of Project?
5 Project Assigned to Whom?
3 Approval of Concept (CPS)
6 Create common form (budgeting tool for all types of projects)
6 Automated vendor submittal of budget/pricing
3 Submittal of budget (to whom for approval)
3 Automated approval within 24 hours
7 RFP Generate RFP, distribute to potential contractors, receive responses and track
6 Electronically track & accept vendor quotes
3 Standard approval process
9 Initiate Online Commitments
9 Track vendors to P.O.'s
9 Purchasing, approval monitor
8 Schedule work
Rpt Field Reports (progress update, etc.)
Rpt Communication method
9 Change order process
9 P.O.'s/Vendors Ability to view contracts and master agreements, collaborate and purchasing info

As a good introductory exercise, work with your team to create a Work Breakdown Structure that identifies the steps it would take to replace a deck in your backyard. Indicate how long each step would take, and who would be responsible. Share this analysis with your friends and see how much detail you can generate to help minimize the surprise and risk in this kind of project.

Figure 8: Exercise to Create a WBS for a Backyard Deck

Activity	Assigned to	Day 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Total

Critical Success Factors. Critical Success Factors (CSF's) are the quantifiable statements that describe the end result(s) expected for a project. It is these CSF's that will ultimately define the project scorecard, as you can see in Figure Nine.

Figure 9: Project Scorecard

Objective	Candidate Critical Success Factors	Measurement	Current Grade	Target Grade
Reduce architectural costs for plan design by 25%	Increase user involvement and engagement in planning process to identify goals and objectives before workspace design begins	Reduction in fees charged for work/rework of workstation design and CAFM system maintenance		A
Sustain a strong employee base	Retain staff and keep up customer-focused training	Reduction in staff turnover to 20%		A
Improve client satisfaction levels	Provide more focused client service	Increase client satisfaction levels on quarterly reports to 96%		A

Project Risk Analysis. The last major piece of project planning includes defining the results expected and evaluating the potential risks or obstacles to reaching success.

Anything that could negatively impact the project success should be identified and considered. The risk analysis should identify any assumptions being made and the probability that those assumptions are correct. In addition, any issues or concerns identified in the project charter should be included in this matrix. Typical project risks and suggestions on activities that will mitigate those risks are presented in Figure Ten.

Figure 10: Risk Management Matrix

Risk	Mitigation Measures	Probability	Impact
Avaiability of key resources	Identify resources ealy and obtain Management commitment to provide Performance bonus for Team Identify back-up resources Backfill positions	High	High
User resistance to change	Develop a change management process Communicate regularly through the organization Develop a good training program	Medium	High
Schedule overrun	Develop detailed project plan Manage to key milestones Assign full-time project control staff Present detailed weekly and monthly reports	Low	Medium

While there are other tools and activities that may be used in planning a project, these are the key tools needed to get you started.

Phase Two: Project Execution and Control

This phase of Project Management is concerned with implementing the work plan and monitoring the resulting activities to make sure the project is on track.

The primary Project Execution and Control activities are:

- Tracking and monitoring
- Issues / Risk Management
- Communication
- Training and Roll-out

Tracking and monitoring The project plan and project budget are the cornerstones of tracking and monitoring. These documents define what was planned—and expected. Identifying what has actually occurred and why there is a variance between expectations and current results (if there is one) can be reported in a number of different ways. Some groups do a line-item analysis against the original project plan and budget. Other groups summarize the status and present their findings at a higher level, focusing only on the key milestones.

This latter approach can lead to surprises that can cripple the project and impact the credibility of the project manager. In either case, it is important to identify what corrective action(s), if any, will be taken and what impact that action will have on the project. It is this kind of status reporting that will be presented to the project owner and to management for review and approval.

Issues/Risk Management. During the course of any project, shift happens and issues arise. These issues may relate either to incorrect assumptions or to unknown conditions. As a first step to managing these issues, it is important to define them. Often additional information is required to determine the exact nature of a particular issue and its impact on the project. Once that information is known, you can create action steps to resolve the issue. All issues should be tracked in an Issue Log, and any corrective action steps added to the project plan. Examples of issues and defined action steps are included in Figure Eleven.

Figure 11: Issues Tracking Log

ID#	Date	Description	Comments / Actions	Priority	Status	Assigned To:
1		How will the policy on records retention impact the training for this project roll-out?	Need to talk with Legal to determine timing of new policy. May need to adjust roll-out schedule to accommodate the adoption and training on this policy.	High	In process	JC
2		When will the new Sustainability Program Manager be hired?	Need to talk with RE to determine if the position has been reviewed, approved. Need to talk with HR about the process and timing for hiring for this position. Need to adjust the process and training manuals to accommodate an interim Program Management	High	In process	DW
3		How will new employees be trained on this system?	Need to talk with the business units about how best to perform on-going	Medium	In process	GP

Communication. Communication is the key to successful project management. Making sure that all stakeholders understand the status of the project, their role in the project, new issues as they arise, and risk control is as important as managing the day-to-day tasks. It is equally important to make sure that all employees, particularly those who will be most impacted by the change, are "in the know." Project meetings are a good way to share this kind of information. You should also consider using routine status reports sent as emails, posted on a project website, or posted on your departmental website.

For large projects, a communication plan is developed during the planning and initiation stages. This plan identifies all the stakeholders by category and the type of information each will require as the project moves forward. It also defines the way in which this information will be delivered. Keep in mind that the top skill of a good project manager is communication, followed closely by problem-solving and team leadership.

Training and Roll-out. This last component of project execution is often under-estimated, and because it comes at the end of the project execution cycle, also gets short-changed. However, it is important to remember that the success of any change is based on user acceptance, and users cannot accept what they do not understand or cannot do. Make sure that you identify the steps to design, develop, and deliver the necessary training in your project plan. These steps should include:

- Development of training materials, both for the participants and the trainers;
- Identification of the type of training – online, in-class or OJT (on the job);
- Schedule appropriate time to deliver the training
- Define how to measure the success of the training for each individual;
- Develop a process to support the employees going through this change during the early stages of roll-out.

Phase 3: Project Close-out

At the end of the project, it is important to go back to the original project charter and perform an acceptance check with the key stakeholders. Did the project achieve the results expected? If not, why not? What lessons were learned? This is also the time to test the effectiveness of the training—making sure that the change has been assimilated within the organization. This focus will ensure that the transfer from temporary project status to ongoing day-to-day operations can occur smoothly and without any hiccups.

Section Two: Program Management

Many of the tools and processes used in Project Management will also be used in Program Management. However, as we move from Project Management to Program Manager, we see a change in focus. In Program Management, outcomes become more important than specific deliverables, with a focus on business strategy and how projects will eventually support operational tactics. Program management does not typically have a specific deliverable or time dimension. This change in focus requires that, as Program Managers, we are concerned with:

- Project Prioritization
- Program Governance
- Project Integration and Resource Sharing
- Project Performance
- Training

Project Prioritization

One of the most important roles of Program Management is defining a process and structure by which projects will be evaluated, prioritized and implemented within the organization. For example, Program Management is responsible for developing the cost/benefit matrix described in the prior section. Based on the information in the matrix, projects can be compared on their relative cost and value to the organization. This evaluation can begin with a simple compilation of all projects currently underway or being proposed within your department. (If you haven't taken the time to perform this inventory, you may be surprised by the number of projects you are managing -- or are expected to manage—within your group!)

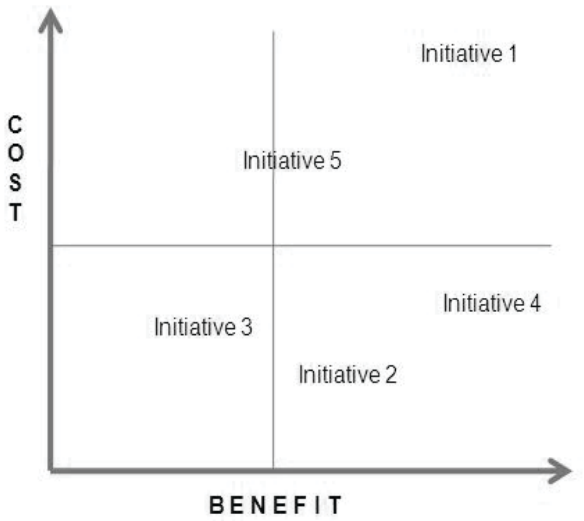
A template for gathering this kind of information is illustrated in Figure Twelve.The columns represent the information that was used to create the cost/benefit analyses that have been created for each project. Once the data on all the projects is gathered, the projects can be compared to each other in a more meaningful way.

Figure 12: Project Portfolio

	Type	Impact on Strategy	Speed to Impact	Complexity	Total Costs	Savings / Revenue	User Impact	Cost Index	Revenue Index	Priority
Initiative One										
Initiative Two										
Initiative Three										
Source: iNPOINT Advisors, LLC										

Another way to represent your portfolio of projects is in a 2x2 diagram like the one shown in Figure Thirteen. Here projects are given an overall rating, again based on the cost / benefit calculation. This information can then be presented to your management team and used as the catalyst for discussions and decisions on which projects should be initiated.

Figure 13 : Value Investment Comparison



Source: iNPOINT Advisors, LLC

Program Governance

Program Management will define an organizational structure for each project, keeping in mind that smaller projects require fewer levels of management. A minimal governance structure for each project would be a project sponsor and a project manager. See Figure Fourteen for a description of the roles that can be included in a project, and think about how these roles would apply to your current projects. Are you appropriately engaging stakeholders and managing participation?

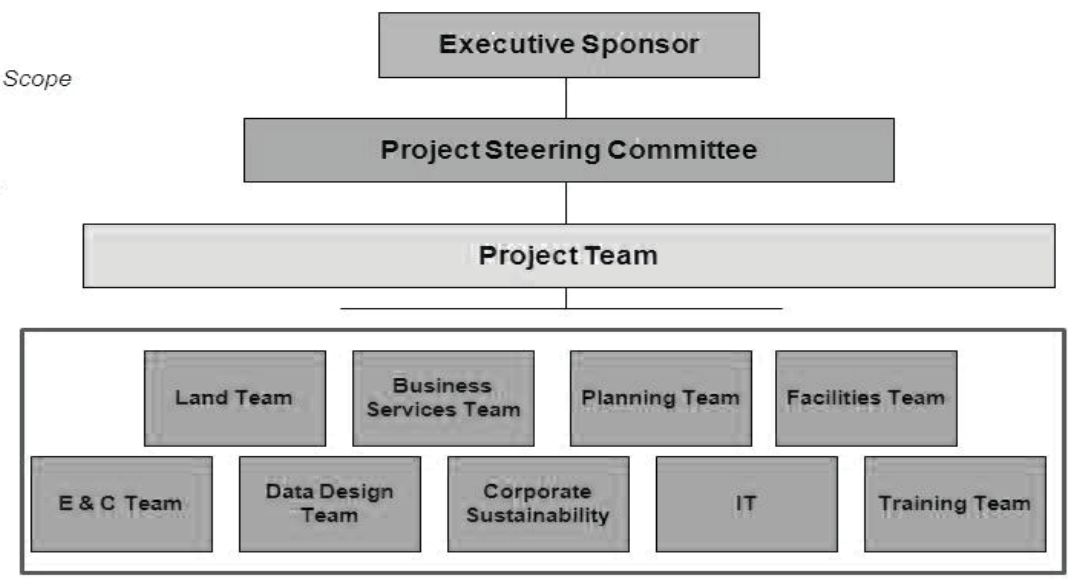
Figure 14 : Possible Project Organization Chart

Project Sponsorship
Policy, Budget, Audit/Controls, Scope

Project Guidance
Standards/Conventions, Business Process Imperatives, Change Management

Project Control
Business Process Recommendations, Issues Resolution, Change Control

Project Execution
Business Process Design, Implementation



Source: iNPOINT Advisors, LLC

Project Integration/Performance Management

Another significant role of Program Management is responsibility for reviewing all project plans and budgets and consolidating them into a single view. When this is done, it will be easy to determine whether any particular employee has been either overbooked or under-utilized. It also becomes clear when budget allocations are being "double-counted." As projects progress, combining information from individual project status reports can quickly identify cross-project issues and conflicts that have to be resolved at the Program Management level.

Standards and Compliance

Program Management is also responsible for creating and delivering the tools and templates to be used across the organization when initiating and managing projects. This activity provides not only consistency but accountability that is shared from business unit to business unit.

Section Three: Change Management

The third discipline in "Making It Happen" is Change Management. Most of us do not wake up each morning and ask excitedly "What can I change today?" In fact, most of us probably wake up hoping that not much will change at all. We are usually comfortable with the status quo because we know what we need to do to be successful in our jobs. Thus when a project is introduced that we believe will change the way we work we become fearful, anxious, and defensive.

Research has uncovered many ways to describe how we ultimately accept change. Oliver Recklies, in his paper "Managing Change - Definition and Phases in Change Processes,"[2]describes the phases of change acceptance, as shown in Figure Fifteen.

Overcoming resistance to change requires an understanding of this dynamic process and managing through the resistance that these negative emotions so often create. The key to leading the change is to deploy your skills at communicating, gaining employee participation, and engaging executive participation and commitment. Effective change management requires deliberate thought and effort. If change is left unattended and without leadership, the desired results do not materialize; and it then becomes difficult, if not impossible, to understand what happened. And an inability to understand what went wrong hampers your ability to design appropriate corrective action, so the problems continue unresolved.

Implementing Change Management helps organizations understand the changes they are facing, define what is needed to ensure that the change will be effectively assimilated, and develop plans for leadership towards the desired outcomes.

[2]http://www.themanager.org/Strategy/Change_Phases.htm

Figure 15: Phases of Change Acceptance

Source: "Managing Change – Definition und Phases in Change Processes" by Oliver Recklies

This approach also provides a way to track whether or not the change is being accepted so that, if needed, additional actions can be taken to ensure success. Change management activities are an integral part of any project. As such, they must be included when developing the Work Breakdown Structure for a project plan.

A simple way to implement a Change Management Methodology is to follow the principles of CARE:

Change Initiation: Identify the changes that will be required in the culture, people, processes, and technologies. Define education, training, and communication activities that must be conducted to prepare all stakeholders for the ultimate transition. As the project progresses, receive, document and track all change requests.

Assessment: Study and analyze the potential impact of the proposed changes on expectations around costs, resources, time, and cultural and environmental acceptance to determine the risks of the change.

Recommendation: Identify recommendations for action and communicate the options to all stakeholders.

Execution: Gain agreement on intended actions and incorporate the decision into project plans, training plans, and budget schedules for execution.

The Change Management process must be initiated at the very beginning of a project to ensure that there is an appropriate and shared baseline of expectations about the impact of the proposed changes on people, culture, processes, and technology. Change management includes defining the need for special education, training, and communication to help prepare all stakeholders for the eventual transition.

These activities can then be incorporated into the project plan, and metrics can be developed to manage performance in these areas. Communication tools must be established to manage and monitor all change requests. Sponsorship roles must be defined for managing the overall decision-making process. As the project progresses, the Change Management team will become an important part of the Program Management team, sharing responsibility for these activities as well as updating schedules and budgets during the life of the project.

Conclusion

The methods involved in delivering strong Project Management, Program Management, and Change Management rely on simple and flexible, yet powerful, tools. These tools enable you to:

- Engage participants and address their issues and concerns throughout the project;
- Manage and minimize the gap between expectations and reality;
- Increase the understanding of all stakeholders as it relates to their roles and responsibilities; and
- Create a collaborative process.

We're done! We've actually run out of things to say. Congratulations on taking this journey with us. We would welcome your feedback; if you want to contact any of the author team with questions, suggestions, praise, or complaints, please do so at any time.

We don't know what's next, but rest assured the team that brought you this book is already hard at work on some new and even more provocative ideas for improving organizational effectiveness. Just watch our dust—or call us and join the crusade.

References

The Evolution of Project Management, Sandro Azzopardi, White Paper presented by Pitman Training

From Project Management to Program Management, Professor Hubert Vaughan, International institute of Engineering Management, Tsinghua University, Beijing, China, published in PM World Today, May 2009,(Vol XI, Issue V)

Introduction to Project Management, Dr. Angela Lewis, White Paper presented by Pitman Training

Project Management Methodology, Duncan Haughey, White Paper presented by Pitman Training

Managing Change – Definition und Phases in Change Processes, Oliver Recklies, White Paper presented by themanager.org, 2001.

Top 10 Qualities of a Project Manager, Timothy R. Barry, White Paper presented by Pitman Training

ABOUT THE AUTHOR

Georgia Perkey
Managing Partner, iNPOINT Advisors

Ms. Perkey is a seasoned business leader who has a unique background that includes both internal and external executive level positions. Her experience has included roles as Vice President of Operations, Chief Information Officer, and Senior Managing Director of Strategy Consulting. In these roles, she has focused on solving operational and management problems by better utilizing people, process, and technology. She has a solid track record in effectively identifying and managing organizational change from the idea through to its execution, and has authored several methodologies in Program, Project and Change Management for industry groups and companies. Through her work, she has earned a reputation as a strong business leader, change agent and group facilitator – creating positive energy around operational, organizational, and technology change at all levels within an enterprise.

Ms. Perkey has worked for companies in Real Estate, Financial Services, Health Care, Retail and Hospitality, Engineering and Construction. Some of her client and company associations include Earth Tech (a division of Tyco International), CB Richard Ellis, PricwaterhouseCoopers, Ernst & Young, California Pizza Kitchen, GMAC Commericial Mortgage, Washington Mutual, Bank of America, BRE Properties, PacTel Properties, Mellon McMahon Asset Advisors, Blue Shield of Northern California, Allegis Realty Investors, Glenborough Realty Trust, Kaiser/Permanente Health Care, University of California Medical Center.

Ms. Perkey's education includes an MBA in Business Analysis and Information Systems from California State University at San Francisco. She has been an active participant in the real estate industry since 1983. She has served the organization for Commercial Real Estate Women in its early years with leadership positions at both the local and national level. For CoreNet Global, she headed the "Technology and the Web" research tract of the CoreNet Global 2010 Research project. She has also been an active contributor to IFMA, BOMA, and IREM in terms of speaking and writing.

Ms. Perkey also believes in supporting her community. Her current commitment is as a Board member on the Foundation of the Los Angeles Biomedical Research Institute, serving as the Chair of the Discovery Showcase. She is also the Program Chair for the Organization of Women Executives.

Currently, Ms. Perkey is the Managing Partner for iNPOINT Advisors and can be reached at gperkey@inpointadvisors.com

GLOSSARY

TERM	DEFINITION
ACEEE - American Council for Energy Efficient Economy	A nonprofit organization whose mission is to advance energy efficiency as a fast, cheap, and effective means of meeting energy challenges. ACEEE promotes energy efficiency by conducting technical and policy analyses; advising policymakers and program managers; and working collaboratively with businesses, government officials, public interest groups, and other organizations.[1] http://www.aceee.org
AIA - American Institute of Architects	A professional organization for architects in the United States. They provide resources for the architectural and construction management communities. http://www.aia/org
ASME – American Society of Mechanical Engineers	A professional society for Mechanical Engineers. They set codes and standards for mechanical devices and publish numerous technical documents.
Assignment	A transfer between parties of title to any property, real or personal, or of any rights or estates in the property.
Audit Clause	A negotiated lease clause that allows an audit of the lease expenses, defined as an inspection of the books, records and procedures used by a landlord to justify its charges.
BALLE- Business Alliance for Local Living Economies	A growing North American alliance of nearly 60 fully autonomous local business networks with their own names, missions, and initiatives, representing about 20,000 US and Canadian entrepreneurs. All networks share a commitment to Living Economy principles. BALLE works to catalyze, strengthen and connect these local business networks dedicated to building Local Living Economies. A Local Living Economy ensures that economic power resides locally, sustaining healthy community life and natural life, as well as long-term economic viability.[2] http://www.livingeconomies.org
Base Year	The year upon which a direct expense escalation of rent is based.
Benchmarking	The process of comparing business metrics against a set of industry standard or best practices metrics to evaluate the performance of an organization.
Biodegradable	Description of a product that degrades over time into minerals.
Biodiversity	The variation of life forms within a given ecosystem.[3]
Biofuels	Solid, liquid or gaseous fuel obtained from relatively recently lifeless or living biological material and is different from fossil fuels, which are derived from long dead biological material.[4]
Biomass	A renewable energy source coming from once living organisms such as wood, waste or alcohol fuels.

Biomimicry	A concept that examines nature, its models, systems, processes, and elements— and emulates or takes inspiration from them to solve human problems sustainably.[5]
Blend and Extend	Blend-and-extend transactions allow a tenant to combine costs associated with the existing lease with current market rates over an extended new period to lower the effective rate over the term of the new obligation.
BOMA	Building Owners and Managers Association – An association of managers and owners of commercial (mainly office) buildings. The Association shares information on management techniques as well as setting standards for such things as floor measurement of office buildings. http://www.boma.org
Brownfield	A term used to describe abandoned or unused land that may potentially contain environmental contamination.
C-Suite	The group of officers of a business organization, who have the word "chief" in their titles.
CAFM – Computerized Facilities Management Software	A term used to describe computer applications that provide for managing large facilities. The application typically manages the inventory of all assets, space plans, tools to manage moves and space management and maintenance management.
Carbon Credits	A key component of national and international attempts to mitigate the growth in concentrations of greenhouse gases (GHGs). One Carbon Credit is equal to one ton of Carbon. Carbon trading is an application of an emissions trading approach. Greenhouse gas emissions are capped and then markets are used to allocate the emissions among the group of regulated sources. The idea is to allow market mechanisms to drive industrial and commercial processes in the direction of low emissions or less "carbon intensive" approaches than are used when there is no cost to emitting carbon dioxide and other GHGs into the atmosphere. Since GHG mitigation projects generate credits, this approach can be used to finance carbon reduction schemes between trading partners and around the world.[6]
Carbon Footprint	The total set of greenhouse gas (GHG) emissions caused directly and indirectly by an individual, organization, event or product. An individual, nation, or organization's carbon footprint can be measured by undertaking a GHG emissions assessment.[7]
Carbon Offsetting	The mitigation of carbon footprints through the development of alternative projects, such as solar or wind energy or reforestation.[8]

Carbon Tax	An environmental tax on emissions of carbon dioxide. Carbon dioxide is a heat-trapping "greenhouse" gas. The purpose of a carbon tax is to protect the environment by reducing emissions of carbon dioxide, helping to mitigate climate change. Some environmental taxes include other greenhouse gases; the global warming potential is an internationally accepted scale of equivalence for other greenhouse gases in units of tonnes of carbon dioxide equivalent.[9]
Cash Flow	Often used to reflect a schedule that shows how money flows in and out of a project during a specified period of time. It can be used to determine the payback period and expected cost benefits for a project.
Cellulosic Fuel	Fuels created by converting cellulose-containing organic matter into fuel. Cellulosic ethanol is made from wood, grasses and non-edible parts of plants.[10]
CERES – Coalition for Environmentally Responsible	A non-profit, national network of investors, environmental organizations and other public interest groups working with companies and investors to address sustainability challenges such as global climate change. Founded in 1989, its core mission is integrating sustainability into capital markets.[11] http://www.ceres.org

CFL – Compact Florescent Light Bulbs	A type of fluorescent light bulb. CFL bulbs generally use less energy than incandescent lamps that produce the same amount of light. They are more expensive but have a significantly longer useful life than incandescent bulbs.
Change Management	The way in which change is introduced to the stakeholders of the initiative so that successful assimilation can occur. It is the structure and the process by which organizations help affected individuals understand and participate in the change so that they and the organization as a whole are successful in the transition.
Class A	A property with excellent location and access to attract the highest quality tenants. Property must be of superior construction and finish, relatively new or competitive with new buildings, and providing professional on-site management.
Class B	Property with good location, management, construction land tenancy. Can compete at low end of Class A.
Class C	Generally an older property with growing functional land/or economic obsolescence.
CMMS – Computerized Maintenance Management System	A term used to describe computer applications that provide for tracking the inventory of equipment that must be maintained, the maintenance schedule and the maintenance history.

Commissioning	The process of assuring that all systems and components of a building or industrial plant are designed, installed, tested, operated, and maintained according to the operational requirements of the owner or final client.[12]
Contingent Fees	Fees to be paid only in the event of a future occurrence.
Contraction Option	A pre-negotiated option that guarantees that upon proper notice and a specified time period(s), a tenant may contract its premises to a pre-negotiated size.
CSF – Critical Success Factors	A quantifiable statement that describes the factors that must be achieved in order for a project to be considered successful.
CSR – Corporate Social Responsibility	A form of corporate self-regulation integrated into a business model. Ideally, CSR policy would function as a built-in, self-regulating mechanism whereby business would monitor and ensure their adherence to law, ethical standards, and international norms. Business would embrace responsibility for the impact of their activities on the environment, consumers, employees, communities, stakeholders and all other members of the public sphere. Furthermore, business would proactively promote the public interest by encouraging community growth and development, and voluntarily eliminating practices that harm the public sphere, regardless of legality. Essentially, CSR is the deliberate inclusion of public interest into corporate decision-making, and the honoring of a triple bottom line: People, Planet, Profit.[13]

CT – Current Transformer	A device attached to an electrical circuit that senses and gathers data on voltage, wattage and amperage in real time. These devices are often referred to as sub-meters and are effective in monitoring electrical usage by circuit.
Day in the Life Study	A process whereby all of the involved corporate departments are viewed during various times of the work day to determine actual space utilization.
Demand Rate	The maximum amount of electric power that must be kept available to a customer. [14]
Demand Response Technology	Mechanisms which manage consumption of electricity. They reduce energy usage when specified levels of utilization occur.
DfE – Design for the environment	A general concept that refers to a variety of design approaches that attempt to reduce the overall environmental impact of a product, process or service, where environmental impacts are considered across its life cycle The US Environmental Proection Agency offers a program that encourages corporate partners and environmental groups to collaborate on related initiatives. http://epa.gov/dfe/
Ecoefficient	The concept of creating more goods and services while using fewer resources and creating less waste and pollution.[15]

EE- Electrical Engineer	A licensed engineer who specializes in the analysis, design and operations of electronic, power and control systems.
Effective Rate	The rental rate actually achieved by the Landlord after deducting the value of concessions from the Base Rental Rate paid by Tenant, usually expressed as an average rate over the term of the lease.
EIA – Energy Information Administration Agency	A independent statistical agency within the U.S. Department of Energy whose mission is to provide policy-independent data, forecasts, and analyses to promote sound policy making, efficient markets, and public understanding regarding energy and its interaction with the economy and the environment.[16] http://www.eia.doe.gov
Energetics	The scientific study of energy flows and storages under transformation. Because energy flows at all scales, from the quantum level, to the biosphere and cosmos, energetics is, therefore, a very broad discipline, encompassing for example thermodynamics, chemistry, biological energetics, biochemistry and ecological energetics.[17]

Energy Independence and Security Act of 2007	(originally named the CLEAN Energy Act of 2007) is an Act of Congress concerning the energy policy of the United States which was introduced in the United States House of Representatives by Democrats as part of their 100-Hour Plan during the 110th Congress. The stated purpose of the act is "to move the United States toward greater energy independence and security, to increase the production of clean renewable fuels, to protect consumers, to increase the efficiency of products, buildings, and vehicles, to promote research on and deploy greenhouse gas capture and storage options, and to improve the energy performance of the Federal Government. [18]
Energy Star	A program developed by the U.S. Department of Energy (DOE) under the Environmental Protection Agency. The intent of the program is to provide tools to assist organizations in energy reduction strategies. http://www.energystar.gov
EPA – Environmental Protection Agency	An agency of the US Federal government responsible for regulating chemicals and protecting human health and the environment http://www.epa.gov

EPEAT®	A system that helps purchasers evaluate, compare and select electronic products based on their environmental attributes. The system currently covers desktop and laptop computers, thin clients, workstations and computer monitors.Desktops, laptops and monitors that meet 23 required environmental performance criteria may be registered in EPEAT by their manufacturers in 40 countries worldwide. Registered products are rated Gold, Silver or Bronze depending on the percentage of 28 optional criteria they meet above the baseline criteria. EPEAT operates an ongoing verification program to assure the credibility of the registry.[19] http://www.epeat.net
Expansion Option	A pre-negotiated option that guarantees that during a specified time period and with proper notice, a tenant has the right to expand into a defined space.
Expense Caps	Limits on the amounts that certain operating expenses can rise annually.
Face Rate	The “asking” or nominal rental rate published by the Landlord.
FF&E – Furniture, Fixtures and Equipment	A commonly used category in budgets related to the equipment and furniture in an office space,
FSC – Forest Stewardship Council	The Forest Stewardship Council was created to change the dialogue about and the practice of sustainable forestry worldwide. The purpose of FSC-US is to coordinate the development of forest management standards throughout the different biogeographic regions of the U.S.[20] http://www.fsc.org
Fuel cells	An electrochemical conversion device. It produces electricity from fuel (on the anode side) and an oxidant (on the cathode side), which react in the presence of an electrolyte. The reactants flow into the cell, and the reaction products flow out of it, while the electrolyte remains within it. Fuel cells can operate virtually continuously as long as the necessary flows are maintained. Fuel cells are different from electrochemical cell batteries in that they consume reactant from an external source, which must be replenished– a thermodynamically open system. By contrast, batteries store electrical energy chemically and hence represent a thermodynamically closed system. Many combinations of fuels and oxidants are possible. A hydrogen fuel cell uses hydrogen as its fuel and oxygen (usually from air) as its oxidant. Other fuels include hydrocarbons and alcohols. Other oxidants include chlorine and chlorine dioxide.[21]

Full Service Gross	A rental rate that includes operating expenses and real estate taxes for the first year. The tenant is generally still responsible for any increases in Operating Expenses over the Base Year amount.
Geothermal Power	Power extracted from the heat stored in the earth.
GHG – Greenhouse Gasses	Gases in an atmosphere that absorb and emit radiation within the thermal infrared range. The main greenhouse gases in the Earth's atmosphere are water vapor, carbon dioxide, methane, nitrous oxide, and ozone.[22]
Green Globes	An environmental assessment, education and rating system that is promoted in the United States by the Green Building Initiative, a Portland, Oregon-based non-profit. The system, which is an online interactive software tool, competes with the Leadership in Energy and Environmental Design (LEED) system from the U.S. Green Building Council.[23] http://www.thegbi.org
GREENGUARD Certification	A certification program offered by the GREENGUARD Environmental Institute, a non-profit organization. The program sets standards for indoor products, environmental conditions such as indoor air quality, and building construction. http://www.greenguard.org
Greenhouse Gases	Gases in an atmosphere that absorb and emit radiation within the thermal infrared range. The main greenhouse gases in the Earth's atmosphere are water vapor, carbon dioxide, methane, nitrous oxide, and ozone. In our solar system, the atmospheres of Venus, Mars and Titan also contain gases that cause greenhouse effects.[24]
Greenwash	Term used to describe the practice of companies disingenuously spinning their products and policies as environmentally friendly, such as by presenting cost cuts as reductions in use of resources. It is a deceptive use of green PR or green marketing. [25]
GRI – Global Reporting Initiative	A network based organization that has developed a reporting framework for organizations to use to report their economic, environmental and social performance. The cornerstone of the framework is the Sustainability Reporting Guidelines. The third version of the Guidelines – known as the G3 Guidelines - was published in 2006. [26] http://www.globalreporting.org
HFC – Hydroflouro-carbons	Chemical compounds composed entirely of carbon, hydrogen, and fluorine. They have no known effects at all on the ozone layer.[27]

HRV - Heat-Recovery Ventilation	A ventilation system that employs a counter-flow heat exchanger between the inbound and outbound air flow. HRV provide fresh air and improved climate control, while also saving energy by reducing the heating (or cooling) requirements. Energy recovery ventilators (ERVs) are closely related, however ERVs also transfer the humidity level of the exhaust air to the intake air.[28]
HVAC – Heating, Ventilation and Air Conditioning	The term used to describe the air heating, cooling and ventilation systems with in a building.
Hydroponic	A method of growing plants using mineral nutrient solutions, without soil. Terrestrial plants may be grown with their roots in the mineral nutrient solution only or in an inert medium, such as perlite, gravel, or mineral wool.29
ISO - International Organization for Standardization	An international-standard-setting body composed of representatives from various national standards organizations. Founded in 1947, the organization promulgates worldwide proprietary industrial and commercial standards.[30] http://www.iso.org
KPI – Key Performance Indicators	A measure of performance. [1]Such measures are commonly used to help an organization define and evaluate how successful it is, typically in terms of making progress towards its long-term organizational goals. KPIs can be specified by answering the question, "What is really important to different stakeholders." KPIs are frequently used to measure activities such as the benefits of leadership development, engagement, service, and satisfaction. KPIs are typically tied to an organization's strategy.[31]
LCA – Life Cycle Assessment	The investigation and valuation of the environmental impacts of a given product or service caused or necessitated by its existence.[32]
LED – Light Emitting Diode	An electronic light source. Modern LEDs are available across the visible, ultraviolet and infra red wavelengths, with very high brightness. LEDs are based on the semiconductor diode. When the diode is forward biased (switched on), electrons are able to recombine with holes and energy is released in the form of light. The LED is usually small in area (less than 1 mm^2) with integrated optical components to shape its radiation pattern and assist in reflection. [33]

LEED – Leadership in Energy and Environmental Design	A rating system developed by the U.S. Green Building Council (USGBC) to provide a standard to evaluate how favorable a building is to the environment. http://www.usgbc.org
Letter of Credit	An engagement, pledge or commitment by a bank or person, made at the request of a customer, stating that the issuer will honor drafts or other demands for payment upon full compliance with the conditions specified in the Letter of Credit.
Low Hanging Fruit	A term used to define quick and easily attainable cost savings.
ME – Mechanical Engineer	A licensed engineer who specializes in the analysis, design, manufacturing and maintenance of various mechanical systems.
Modified Gross	A type of lease arrangement whereby certain operating expenses are included in the Base Rent but have an expense stop over which Tenant pays any annual increases.
Non-Disturbance Agreement	A provision in a lease whereby the landlord or mortgagee of the building agree not to disturb tenant's right of occupancy in the event of a sale, foreclosure or other event of ownership transfer.
Operating Expense Exclusions	Typically a set of exclusions to Operating Expenses as identified in a Lease document. Typical exclusions include leasing commissions, tenant improvement costs, personal income taxes of the building owners, penalties and late fees, etc. Landlords often provide an abbreviated list of exclusions to Operating Expenses and Tenants may negotiate to expand or clarify the list of Operating Expense Exclusions.
Operating Expenses	The actual cost of operating income-producing property, including utilities and similar day-to-day expenses, taxes, insurance and reserves for the replacement of items that wear out.
Pass-through	Building and operating expenses that are paid by the tenant under the terms of a lease.
Payback	The period of time required for the return on an investment to match the cost.
PAYT (pay as you throw)	A usage-pricing model for disposing of municipal solid waste. Users are charged a rate based on how much waste they present for collection to the municipality or local authority. (Also called unit pricing, variable rate pricing, or user-pay).[34]

PCW – Post Consumer Waste	The garbage that individuals routinely discard, either in a waste receptacle or a dump, or by littering, incinerating, pouring down the drain, or washing into the gutter. Post-consumer waste is distinguished from pre-consumer waste, which is the reintroduction of manufacturing scrap (such as trimmings from paper production, defective aluminum cans, etc.) back into the manufacturing process. Preconsumer waste is commonly used in manufacturing industries, and is often not considered recycling in the traditional sense.[35]
PE – Professional Engineer	A licensed engineer who has the authority to sign and seal (known as "stamp") engineering documents.
Personal Guarantee	Promise made by a tenant which obligates him/her to personally repay debts his/her corporation defaults on.
Photovoltaic	A technology used to convert solar power into electricity using solar cells. The devices use photodiodes through which current is generated from light energy.
Portfolio	A group of investment assets.
Program Management	Management of the outcomes and strategies of a set of projects.
Project	Any temporary one-time activity undertaken by a group or organization for a specific reason to produce a specific result. A project has clear beginning and end dates.
Project Management	The way in which organizations apply discipline to starting, executing and delivering the expected results.
Project Plan	A plan detailing activities, often called tasks, that must be undertaken to complete a project. It includes the sequence in which those tasks must occur, who will be performing the tasks and the estimated duration of each task. The plan also identifies milestone dates and quantifiable deliverables.
Proposition 13	A ballot initiative to amend the California state constitution that resulted in a property tax cap on real estate throughout the state. This cap often results in a dramatic increase in property tax rates when property is sold or transferred.

Renewable Energy Certificates	(Also known as Green tags, Renewable Energy Credits, or Tradable Renewable Certificates (TRCs), are tradeable environmental commodities in the United States which represent proof that 1 megawatt-hour (MWh) of electricity was renewable (generated from an eligible renewable energy resource). These certificates can be sold and traded or bartered and the owner of the REC can claim to have purchased renewable energy. While traditional carbon emissions trading programs promote low-carbon technologies by increasing the cost of emitting carbon, RECs can incentivize carbon-neutral renewable energy by providing a production subsidy to electricity generated from renewable sources. It is important to understand that the energy associated with a REC is sold separately and is used by another party. The consumer of a REC receives only a certificate. [36]
Renewal Option	The right of a tenant to renew (i.e. extend the term of) a lease for a stated period of time and rent at an amount that can be determined.
Right of First Offer	A contractual right that the seller must first give the rights holder the opportunity to lease or purchase an asset, but does not set requirements for the transaction.

Sale-Leaseback	A financing arrangement in which a property owner sells all or part of the property to an investor and then leases it back. Although the lease actually follows the sale, both are agreed to as part of the same transaction.
SBS-Sick Building Syndrome	A combination of ailments (a syndrome) associated with an individual's place of work (office building) or residence. Sick building causes are frequently pinned down to flaws in the heating, ventilation, and air conditioning (HVAC) systems. Other causes have been attributed to contaminants produced by outgassing of some types of building materials, volatile organic compounds (VOC), molds, improper exhaust ventilation of ozone (byproduct of some office machinery), light industrial chemicals used within, or fresh-air intake location / lack of adequate air filtration. [37]
Security Deposit	Generally, a deposit of money by a tenant with a landlord to secure performance of a lease.
Space Program	A process whereby each involved corporate department is interviewed to determine a total space requirement for the corporation. Usually done by an architect or space planner.

Subleasing	A lease, under which the lessor is the lessee of a prior lease of the same property. The sublease may be in different terms from the original lease but cannot contain a greater interest.
Subordination Agreement	An agreement by which the priority of a mortgage lender is relinquished in favor of that of a lender that would otherwise be junior in status.
Sustainability Plan	A plan developed by organizations which defines initiatives to be undertaken by the organization to insure the sustainability of the enterprise, the employees and the environment.
Sustainable Deconstruction	Environmentally friendly methods to dispose of or re-use waste produced by deconstruction.
Task Force	A group of people brought together to perform a specific function. The group typically disbands at the end of the project.
TBL – Triple Bottom Line	A concept describing the three aspects of organizational sustainability. People – sustaining relationships with employees, suppliers and the community Planet – sustaining the global environment Profit – sustaining the business viability of the organization

Tenant Improvement Allowance	An allowance negotiated in the lease and included from landlord to tenant in order to finance improvements to the building to meet the tenant's needs. May be new improvements or remodeling.
Termination Option	A pre-negotiated option that allows the tenant to terminate all or part of a lease obligation. Typically accompanied by the reimbursement to the landlord of all unamortized costs at a minimum, and often accompanied by an additional termination fee.
Thermal Energy	A form of energy that manifests itself as an increase of temperature. It is also the sum of sensible heat and latent heat. [38]
Tidal Power	A form of hydropower that converts the energy of tides into electricity or other useful forms of power.[39]
Triple Net Rent (NNN)	Rent stipulated in a lease in which the tenant agrees to pay a share of the landlord's operating expenses and/or real estate taxes for the building proportionate to the amount of space it occupies.

USGBC – US Green Building Council	A non-profit trade organization that promotes environmental sustainability of buildings. The organization developed the LEED certification process. http://www.usgbc.org
VOC – Volatile Organic Compound	A vaporous chemical[40]
WBS – Work Breakdown Structure	A numbering scheme that reflects the sequence of tasks and their hierarchy.

Endnotes

1 http://en.wikipedia.org (hereafter referred to as Wikipedia)
2 Wikipedia
3 Wikipedia
4 Wikipedia
5 Wikipedia
6 Wikipedia
7 Wikipedia
8 Wikipedia
9 Wikipedia
10 Wikipedia
11 Wikipedia
12 Wikipedia
13 Wikipedia
14 www.Answers.com
15 Wikipedia
16 Wikipedia
17 Wikipedia
18 Wikipedia
19 http://www.epeat.net
20 http://www.fsc.org
21 Wikipedia
22 Wikipedia
23 Wikipedia
24 Wikipedia
25 Wikipedia
26 http://www.globalreporting.org
27 Wikipedia
28 Wikipedia
29 Wikipedia
30 Wikipedia
31 Wikipedia
32 Wikipedia
33 Wikipedia
34 Wikipedia
35 Wikipedia
36 Wikipedia
37 Wikipedia
38 Wikipedia
39 Wikipedia
40 Wikipedia

Acknowledgement

The IFMA Foundation has an enviable position in the arena of research for the built environment. Enviable in that, as an organization, we can respond quickly and eloquently to the current needs of those we serve. We are notable enough to make significant impact and nimble enough to efficiently produce the extraordinary research that our constituents fervently demand.

In late winter of 2009 the Foundation approached me with a request to do an addendum to the research that I had championed to completion the previous October. The research, *The Business of Green Cleaning*, was extremely successful and well-received across the multiple disciplines of the commercial real estate industry. Due to the recent release of that publication and the infancy of our marketing efforts to get that book out, it just wasn't the right thing to do at that time.

I passionately explained to our Knowledge Management team that we needed to act quickly and develop a different type of publication - one that assisted those in the built environment in reducing operating costs rapidly (within a six-month period of time) and that was threaded by a theme of sustainability. With their support and in response, Cut It Out! was conceived.

The magic of this work however, doesn't begin there; it begins with the formation of the remarkable team of authors. The collection of contributors and their passion for making this effort a success is truly amazing – for over seven months, the Cut it Out! team has collaborated, created, critiqued, and celebrated this book. Each principal author brought a unique perspective along with their brilliant professional contributions.

- Edie – Our innovative peace keeper
- Georgia – Our passionate and brilliant project team leader
- Janice – Our sage and sound legal scholar
- Kelly and Matson – Our earthy and eco-friendly sources
- Jim – Our tireless and erudite editor
- Charlie – Our luminous and very grounded threader
- Diane – Our ardent advocate of change
- Glenn – Our pioneer of transformation
- Shad – Our prolific and enlightened expert

As the champion of this publication (and also as author of one of the eleven chapters), I am humbled by the power of collaboration and unwavering dedication these truly astounding individuals have given on a completely volunteer basis in order for Cut it Out! to come to fruition. For their contributions and their passion the IFMA Foundation Leadership and I am tremendously grateful.

"Never doubt that a small group of thoughtful, concerned citizens can change the world. Indeed it is the only thing that ever has."
Margaret Mead

Jennifer A. Corbett-Shramo, IFMA Fellow
IFMA Foundation Trustee

If you find this publication useful, there is something you should know...

Established in 1990 as a non-profit, 501(c)(3) corporation, and separate entity from IFMA, the IFMA Foundation works for the public good to promote priority research and educational opportunities for the advancement of facility management. The IFMA Foundation is supported by the generosity of the FM community including IFMA members, chapters, councils, corporate sponsors and private contributors who share the belief that education and research improve the FM profession.

IFMA FOUNDATION
WWW.IFMAFOUNDATION.ORG
EDUCATION • RESEARCH • SCHOLARSHIPS

IFMA Foundation contributions are used to:
Advance FM education– to keep facility managers up-to-date on the latest techniques and technology, as well as increase accredited degree programs, worldwide.
Underwrite research – to generate knowledge that directly benefits the profession
Provide scholarships – to support education and the future of the facility management profession

Without the support of workplace professionals, the IFMA Foundation would be unable to contribute to the future development and direction of facility management. That's why we need your help. If you are concerned about improving the profession and your career potential, we encourage you to make a donation or get involved in a fund-raising event. To learn more about the good works of the IFMA Foundation, visit www.ifmafoundation.org.

2009-2010 IFMA Foundation

Major Benefactor
Bentley Prince Street

Platinum Sponsor
Steelcase Inc.

Gold Sponsors
Acuity Brand Lighting | ARAMARK Management Services
Denver Chapter of IFMA | Facility Engineering Associates, P.C.
Greater New York Chapter of IFMA | Greater Triangle Chapter of IFMA
Graphic Systems, Inc.| JohnsonDiversey Inc. | Kayhan International Limited

Silver Sponsors
Dallas Fort Worth Chapter of IFMA
East Bay Chapter of IFMA | Kent Miller, FMP
Kimball Office Furniture Co. | NW Energy Efficiency Alliance
Central Pennsylvania Chapter of IFMA
San Francisco Chapter of IFMA | San Diego Chapter of IFMA | SoCal Office Technologies

Additional books can be ordered at the IFMA online book store at www.ifma.org
1 E. Greenway Plaza, Suite 1100 | Houston, Texas 77046 | 281.974.5600 | www.ifmafoundation.org

Copyright and photocopying: Because this report is copyrighted, one must obtain permission to copy from the Copyright Clearance Center (CCC), 222 Rosewood Drive, Danvers, Mass. 01923. CCC's phone number is (978) 750-8400; fax number is (978) 750-4470. There is a nominal charge payable to CCC to photocopy any page herein for personal or internal reference use. Unauthorized duplication or use of the information and/or contents herein without express written authorization of IFMA Foundation is strictly prohibited. 2008 IFMA Foundation All rights reserved. ISBN 1-883176-74-3