



Green Cost Cutting

Five Ways to Get Lean Now

AN EARLY RELEASE FROM THE FORTHCOMING BOOK

Green Recovery:

Get Lean, Get Smart, and Emerge from the Downturn on Top

BY

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INTRODUCTION

Green Recovery*

FIVE DAYS BEFORE he took over as CEO of the world's largest corporation in early 2009, Wal-Mart executive Mike Duke stood in front of his employees and described how different the world is today. He said it's a troubling time, with new leaders, new ideas, and a global economic crisis. Nobody, Duke said, is insulated from this situation. For the most part, his talk was what you'd expect to hear from a CEO during a recession. But then Duke went a different direction and asked the hundreds of employees

*The full plan for a strategic green recovery will be available as a book in August 2009. We're releasing this special report early to provide the overarching logic of the plan (this introduction) and some of the most profitable, tactical actions companies should focus on immediately (Chapter 2, Get Lean). Because the need is urgent, we wanted to make these ideas available digitally before the printed book comes out. Please look for the rest of the discussion on getting smart, creative, and engaged in the months to come.

in the room, and the many thousands watching online, “Sustainability is even more critical now, isn’t it?”

Duke described the many environmental projects Wal-Mart remained committed to, such as reducing transportation costs and energy use across the company. To make his point as obvious as possible, he summed up, “My message to you today I hope will be real clear: we want to accelerate our efforts in sustainability, we want to broaden our efforts.” This does not sound like a company slowing down its green efforts because of a recession.

So why is the CEO of a \$400 billion company thinking green at a time like this? Because the smartest companies are recommitting to sustainability and using environmental thinking not only to stay profitable, but also to drive innovation and help customers through dark times. The best organizations are preparing to emerge from the downturn better off than their competitors. To be sure, in tough times, it’s hard to prioritize anything but staying alive. But survival and sustainability are truly not at odds. In fact, sustainability is at the very *core* of survival. No company, or society, can last unless it cares for all of its resources and capital—human, financial, and environmental.

Green thinking can help spur an economic recovery, both for companies and for countries. I’m not talking about the kind of recovery that moves you into the intensive care unit for twenty-four-hour support. I’m thinking more about the type of comeback that U.S. sprinter Gail Devers made in the early 1990s. While training for the 1988 Olympics, Devers fell ill and was later diagnosed with a thyroid condition called Graves’ disease. After radiation therapy, she went on to win three gold medals in the 1992 and 1996 games. In a Devers kind of recovery, you come back stronger than ever.

The hard times propel some people, and some organizations, to greatness. As *Fortune* magazine writer Geoff Colvin put it in a January 2009 article about managing in tough times,

It’s hard to be upbeat in a recession, but it truly is an opportunity. Marathoners and Tour de France racers will tell you that a race’s hardest parts, the uphill stages, are where the lead changes hands . . . When this recession ends, when the road levels off and the world seems full of promise once more, your position in the competitive pack will depend on how skillfully you manage right now.

Green Recovery makes the case that greening your business is more important now than ever. At its core, green is about doing more with less, which can save you money quickly. It also frees up capital to invest in building a

stronger, more resilient company—one ready to take the lead from slower-moving competitors. Following the green path, *especially* in hard times, can lead your company to higher profits and sustainable advantage.

Green Is a Source of Cost Savings, Growth, and Innovation

Of all the mental hurdles keeping your company from profiting from green thinking, none compares to the misconception that environmental practices *always* cost a lot of money. But green doesn't raise costs, it lowers them (quite often in the short run, and definitely in the long run).

Although your instinct may be to retreat from green initiatives in hard times, that would be shortsighted and a huge mistake. In tight times, most companies need to focus on their bottom lines, cut costs, and conserve cash—and they need to do it fast. Reducing energy use and waste, two pillars of green, can save a great deal of money.

But as they say, nothing in life is free. If I said that environmental strategy saved money without any hard work, time, or possibly capital investment, you might think I also had a bridge to sell you. Yes, some projects will save money immediately at virtually no expense, but greater rewards often require some commitment. So if you want to reduce energy costs, asking people to turn off lights won't cost anything. But changing lightbulbs and installing motion detectors to get larger savings will clearly take some capital. The ROI will be high and the payoff fast, but it still requires some up-front expense.

So the critical distinction here is between costs and investments. Let me be blunt: if your business is unable to allocate any human or financial capital for investment—in R&D, customer relationships, people, process changes, or *anything*—then no strategy, including a green one, will matter right now. Survival will be the only priority, and that means conserving cash above all. But most companies, even in these hard times, are still making decisions about where to put their attention, people, and money every day.

For those companies that are navigating these tricky waters but also want to position themselves for dominance in the future, an environmental focus can make all the difference. Setting aside some percentage of capital expense or R&D budgets for *green* spending and innovation—as I'll show you a few leading companies are doing today—will ensure you invest where it's most strategic.

The logic for going green is no different from the logic for pursuing other business strategies. Companies look to drive profitability, innovation,

customer loyalty, employee engagement, and so on. But unlike with most other strategies, the external forces driving green thinking make this topic unique and unavoidable.

The Green Wave Rolls On

There is nothing normal about the downturn that began in 2008. Commentators have run out of ways to say that the global economic crisis is the worst in memory. The scale of the problems and the efforts to solve them are hard to grasp. If companies only had to deal with the economic situation, it would be enough.

But on top of what's unique about this moment, most of the forces driving companies to go green have not gone away. Environmental crises such as climate change and water shortages continue to evolve. Megaforges such as technology-driven transparency and the rise of the middle class in India and China—which will force the price of oil and other resources up over time—continue to advance. Closer to home, key stakeholders still demand more of companies than ever, especially corporate customers greening their supply chains. Even your employees and consumers, both of whom are under extreme financial pressure, still want some measure of environmental performance and social responsibility in the companies they work for and buy from.

All of these pressures make up an overpowering green wave that is changing business permanently. Like it or not, companies and countries must deal with current and longer-term environmental issues while simultaneously working on current economic challenges. In an open letter to President Obama during his first week in office, Stavros Dimas, the European commissioner for the environment, colorfully described the need to handle many challenges at once: “If someone’s basement floods and they lose their job on the same day it is certainly an unlucky day. But they would not wait until they found a new job before pumping the basement and fixing the leak.” Luckily for business, the solutions to both economic and environmental problems overlap heavily.

The same strategies and tactics that address long-term environmental challenges will help you survive today's economic conditions.

How to Recover and Get Stronger by Thinking Green

Green Recovery is a set of prescriptions for companies that want to stay healthy today and also get ready for the inevitable upturn to come. Slashing costs today frees up money to help prepare for future constraints and changing consumer demands. In tight times, figuring out what to prioritize is even more important. This book will help you focus your scarce resources on four strategic areas. You will:

- *Get lean* by revving up your energy and resource efficiency to survive the downturn.
- *Get smart* by using environmental data about products and value chains to save money, innovate, and generate competitive advantage.
- *Get creative* and rejuvenate your innovation efforts by asking heretical questions such as “Can we run our business with no fossil fuels?”
- *Get (your people) engaged* and excited by asking employees to solve their own, the company’s, and even the world’s environmental challenges.

Over the course of this fairly quick tour of going green in hard times, I’ll show you how companies as varied as DuPont, Home Depot, and Microsoft are all getting lean. These leaders are saving tens of millions of dollars just by, among other things, filling trucks tighter, changing lightbulbs, or reducing business travel. We’ll also see how Procter & Gamble got smart and used better data to launch a new laundry product that’s one of a group of sustainability-themed innovations generating more than \$2 billion in revenue. And we’ll look closely at a revolutionary green product that’s making millions for a midsize American company that nobody would’ve expected to create a disruptive innovation.

The four big areas of focus will benefit your company today *and* tomorrow. Betting on efficiency and getting lean will save you money quickly, but also make you more competitive in a future with higher resource prices and more questions from customers about your environmental impacts. Gathering data on the company’s environmental footprint up and down the value chain will help you identify high-priority areas for cost cutting today *and* make you smarter about where to focus longer-term innovation efforts. Getting creative means optimizing today’s processes and operations *and* developing tomorrow’s new products and services. And of course, engagement and alignment of all your

people makes all of these benefits possible. In short, green isn't an additional, tangential pursuit that distracts from the real work of the business; it is a core part of operating today.

In tight times, more than ever, the green recovery plan laid out here will make your company more competitive, no matter what its size. As you move down the green recovery path, keep in mind a few themes.

Get Lean on Stuff, Not People

Nobody could say with a straight face that layoffs are completely unavoidable. If your sales drop by 50 percent, which has happened to some auto-makers, you can't afford to keep everyone on the payroll. But companies may rely too much on the crutch of layoffs, which just exacerbates the recession. What's worse, many layoffs have dubious value.

A Bain & Company study from the early 2000s recession concluded that laying people off can be expensive. As the study's authors reported in the April 2002 *Harvard Business Review*, if you refill a job within six to eighteen months, you lose money on the deal. The drag on earnings, they said, includes "severance packages, temporary declines in productivity or quality, and rehiring and retraining costs that more than offset the short-term wage savings."

Badly handled layoffs also destroy morale. To stay strong, to find opportunities to cut costs in smart ways, and to get creative about the future, you'll need everyone on board. So undermining morale may not be a great idea right now.

In many cases, there's another way. The money you save on energy and resource efficiency could help you avoid layoffs. At a Wal-Mart supply chain conference in Beijing in October 2008 (just as the global economy was crashing), Dave Steiner, CEO of Waste Management, spoke about sustainability in hard times. "When things are this tight," Steiner commented, "people see that it's about saving jobs and money. There's no better time to take action."

The companies that find a way to conserve cash and keep people engaged and employed will rebound the fastest when the economy turns around. So instead of relying mainly on layoffs to save money, look for resource efficiency opportunities, particularly in how you use energy.

Save Energy, Save Money

A large part of the efficiency discussion throughout this book will focus on energy. Other environmental priorities such as water, waste, and chemicals

remain important long-run pressures. Reducing your footprint in those areas can absolutely save money, reduce risk, and drive innovation. But the logic for tackling energy efficiency right now is particularly compelling since the wins can be large, quick, and fall right to the bottom line—three appealing criteria when cash is tight and profits scarce.

In chapter 2, I'll share examples of companies reducing expense from building heating, cooling, and lighting; streamlining their IT operations; and slashing miles from their distribution systems. All of these activities have the potential to cut energy use 10 to 25 percent (or more). Even at a low point in the cycle of energy prices, these initiatives pay back quickly and can save you real money.

Investing in energy efficiency may be a matter of survival in the longer run as well. When fossil fuel prices rebound, the companies that are the most reliant on nonrenewable energy—either in their own business or throughout their value chains—may find the cost of operating the old, dirty way far too high for them to compete.

It may be tempting to wait until energy prices go up again before focusing on efficiency. But listen to Intuit CEO Brad Smith, who told *Fortune* magazine in January 2009 that during hard times, “you identify areas where you think you can be more efficient by assuming the worst-case scenario. Then you end up saying, Why don't we just do that anyhow?” One worst-case scenario, a rapid rise in energy prices while companies are still recovering from horrible economic conditions, could sink those on the edge. So as Smith says, just do it anyway and start getting the benefits as soon as possible. Why wait to find out—too late—that it's time to get lean?

Once you start identifying ways to reduce energy and waste, you'll start to realize that the hedge against future uncertainty is worth a great deal. As you begin to look beyond the immediate crisis, you'll see that getting lean frees up resources not only for survival, but for investment for the future.

Create a Leaner, More Innovative Culture

The same strategies that make you lean, smart, creative, and engaged to solve today's problems will help build a stronger company that can outrun its competitors. A leaner, more innovative organization will be better equipped to satisfy customers who are demanding more green products and services. You will also attract and retain the best employees who are looking for something to believe in. Given the combination of today's economic challenges and the range of green wave pressures, developing this more nimble culture may be the only way to stay alive.

Getting leaner and cutting costs frees up capital for building a greener company that can survive the ups and downs. But where should you invest today? What should you prioritize *now* to get ready for growth in better economic times? First, build the right culture for environmental thinking by investing in people and training them to understand green challenges and opportunities. Then create the space for disruptive innovation. In tight times, it's good to know that it doesn't cost anything to *think* differently or ask new, provocative questions such as "What happens to our business if oil quickly rises to \$200 a barrel?"

But encouraging creativity in your employees isn't just about the future. Engaging employees pays dividends *immediately*. On a tactical level, you need their knowledge to find new, leaner ways of operating. You'll save far more money if everyone is looking for ways to cut back. On a more philosophical level, companies with a greener purpose and follow-through engage their people in a whole new way. *Is there a better time to excite people than right now, during an era of massive layoffs and rock-bottom morale?*

So imagine what your company could do with everyone pushing in the same direction, looking for ways to get lean, and thinking differently about the business.

Prepare for the Upturn and for Long-Run Success

As in all downturns, some companies use the opportunity to focus and reinvigorate the core. Muhtar Kent, CEO of Coca-Cola, told the *Wall Street Journal* at the beginning of 2009, "Times like these are not an excuse to sit back and ride out the storm." Green efforts should be no different, especially since the forces behind the sustainability movement are not abating. Those that ignore green trends to focus solely on the travails of the moment may find themselves swept under by forces more powerful than today's economic conditions. These slow responders will miss a historic opportunity to improve their businesses.

Will green strategies *always* succeed or *always* save money quickly? Of course not. Some green initiatives—such as making products with low toxicity, sourcing organic materials, or buying renewable energy—often cost more money up front. But two essential paths in green business, using fewer resources and helping customers lower *their* environmental impacts, increase the total long-term value of the enterprise. These strategies can lower costs directly or generate new revenues, increase share, and enhance brand value.

And over time, even today's lower-ROI green investments may look much better (if, for example, you redesign a product to eliminate a chemical that is then regulated or banned, or if the cost of renewable energy drops below fossil fuel prices).

There are plenty of hurdles keeping you from getting lean or getting creative—the two areas that can generate measurable, tangible value. But that's why getting smart and getting your people engaged are foundational elements of a complete green strategy. If you really know your environmental footprint and your people are committed, you can't guarantee success, but you can minimize your odds of failure.

This book presents an optimistic view of what green can do for your company in hard times. These examples, mainly of successful green initiatives, should help you develop your own profitable tactics and strategies. The part of the story included in this report—the discussion on getting lean—focuses on five key areas of the business that hold great promise for quick wins and sizable savings: facilities (lighting, heating, and cooling), distribution, IT, telework, and waste. Getting lean in these areas will free up cash, but it will also help you think longer term about how the business operates in a more environmentally aware world.

Even in hard times, and perhaps because of them, leading companies will continue to pour the foundations for a new form of capitalism—a way of doing business that takes into account the resource constraints we face and drives innovation to build a leaner, cleaner world. Increasingly, sustainable business will become not a side issue, but a core focus of successful companies.

Going green will not only help you ride out tough times; it will help you come out of the downturn better off than your competitors. Some companies that had a weak commitment to sustainability may be pulling back now. What a great opportunity to take the lead. So get leaner, smarter, more creative, and more engaged *now* to survive, stay relevant, and prepare for a sustainable future.

Let's begin the real recovery today.

2

Get Lean

YOU WOULDN'T THINK DuPont could find any more ways to save energy. After all, this is the company that cut greenhouse gas emissions an astonishing 72 percent over the last two decades and set an aggressive goal to hold energy use flat. Today, DuPont uses 6 percent *less* energy than it did in 1990, despite growing 40 percent. How much blood could the company squeeze from the same stone? Quite a bit, apparently.

In 2008, DuPont launched a new “Bold Energy Plan” to increase sales and lower energy use, or as management put it, “grow while shrinking.” In one year, energy teams around the company found 245 new projects that cost \$50 million to implement. But the initiatives also *save* \$50 million every year, a short twelve-month payback. All those millions are pure profit now.

There are two big lessons here:

1. In tough times, even the leanest companies can find new ways to slash costs.
2. Green initiatives that save energy and other resources can save your company serious money that falls quickly to the bottom line.

In an uncertain economic climate, conserving cash is the first priority, and getting lean on energy and waste becomes absolutely critical. David Abney, COO of UPS, told the logistics trade magazine *Modern Materials Handling* in early 2009, “The economy is making us more hungry to conserve energy and reduce waste. It saves us real dollars if we can operate more efficiently.”

When I asked Doug McMillon, CEO of Wal-Mart International, about his thinking on sustainability for hard times, he described the plan of attack this way: “It seems simple. Eliminate waste to survive and create ‘capital’—human, financial, or environmental—to invest for growth.” In other words, getting lean will help you ride out the hard times, preserve capital to reinvest in your people and innovation, and position you for greater profitability later.

Any “get lean” initiative should seem familiar. During hard times, all the efficiency tools you have are going to be put to the test. Whether you call it “green” or “eco-efficiency”—or by more familiar terms like total quality, lean manufacturing, and Six Sigma—doesn’t matter. The green lens can lead you down some different paths than those other tools, but connects deeply to tried-and-true methods. Either way, the point is clear: use less, save money.

Some initiatives, especially those that just change behaviors, require little to no capital. These kinds of profitable opportunities are not just low-hanging fruit; they’re what energy guru Amory Lovins calls “fruit on the ground”—the business equivalent of switching off the lights when you leave the room (and may literally be turning off the lights). But most projects require some modest investment.

To take a simple example, switching to an energy-efficient lightbulb may pay back in a few months, but it still requires buying a new one and installing it. Green practices can save money fast, so many are no-brainer investments. *And nearly every project described in this chapter has a payback of less than two years, and often far less.* So it’s worth digging deep to find the capital you need. You’re investing in building a leaner, more profitable enterprise, and, remember, *investments are not the same as costs.*

Given the tight restrictions on capital spending in most companies today, what should your priorities be? A powerful analysis from McKinsey & Company

provides some clues at the macro level. McKinsey analysts looked at initiatives ranging from insulating homes to using more hybrid cars to building wind farms. They then calculated how much it would cost to reduce one ton of carbon emissions using these technologies (in consultantspeak, they drew up a “greenhouse gas abatement cost curve”). The data revealed that many of the cheapest initiatives, such as insulation and new lighting, are low tech and pay back fast.

So what can you and your organization change within months that will pay back within a year if not faster? The short answer: reduce waste in all its forms, especially energy, using many off-the-shelf technologies. Leading companies are saving significant money by changing lights, tuning up their cooling systems, shutting off computers, driving fuller trucks, and letting employees telecommute, among other things. And while initiatives in manufacturing may take longer to implement or require more capital, you can find some quick wins and inefficiencies there as well. Let’s look more closely at five areas of the business where green thinking will generate savings fast.

1. Change the Lights and the Heat: Buildings and Facilities

Halifax Bank of Scotland’s customers can visit more than 2,000 branches. Energy bills at the U.K. bank run about \$38 million per year. So the company contracted with Schneider Electric’s Buildings Division to find ways to save money and energy. The bank implemented many simple changes, such as installing more efficient lights and making sure windows were fully sealed and caulked. It also used building controls to optimize and reprogram the lighting, heating, and cooling systems to save energy. The systems turn lights off and set after-hours temperatures to warmer levels in the summer and cooler settings in the winter. Changes like these will save the bank about \$1 million per year, an investment with a one-year payback.

At the same time, Schneider Electric followed its own advice and retrofitted one of its own facilities. These energy efficiency consultants surprised themselves with a 20 percent reduction in energy use and savings of \$200,000, which was twice what they had estimated.

Companies can clearly find many opportunities to significantly improve building efficiency, but *two important areas offer quick paybacks: how you light space and how you heat and cool it*. Beth Stevens, senior vice president of environmental affairs at Disney, says simply, “For quick eco-efficiency gains, lighting and HVAC are at the top of our list.”

Switch to Energy-Efficient Lighting

Changing bulbs cuts costs fast. Grand Central Station in New York is saving \$100,000 a year by converting to compact fluorescent (CFL) bulbs. Home Depot announced that it will save \$16 million a year by changing bulbs in the in-store lighting displays. Coca-Cola Enterprises replaced 4,000 lights with a newer, high-intensity fluorescent system, which will slash energy usage by 5.6 million kilowatt-hours a year. InterContinental Hotels Group (IHG) spent \$400,000 to change 250,000 bulbs and saved \$1.2 million a year—a four-month payback. The examples are everywhere.

The next wave of lighting technology on the horizon seems to be light-emitting diodes (LEDs), which are already in wide use in a traffic lights and little indicator lights. LEDs use much less energy than incandescent bulbs and less energy and heat than even CFLs. They also avoid the one major downside of CFLs, the use of mercury in the bulb. The cost of LEDs continues to fall, and we'll likely see businesses switching to LEDs in the near future.

Turn Off the Lights

In a move that's both highly symbolic and profitable, Disney has begun to consistently turn off its "icons" at theme parks after hours, including the big ball at Epcot and the Tree of Life at Disney's Animal Kingdom. All castles around the world, including Cinderella's, will be put on dimmers to save energy. These giant physical brand statements have generally been lit all night, but the company has decided that it's too expensive—and the wrong thing to do—to leave them on when the parks are closed. Disney estimates that this policy shift, along with other operational changes, will save millions of kilowatt-hours. (It's an estimate because the icons are not yet on separate meters.) The move will also send a signal to millions of park "guests" that Disney is taking energy efficiency seriously, and perhaps inspire visitors to change their own behaviors when they get home.

Other companies are turning lights down or off, but in ways customers wouldn't notice. Many retailers pair skylights with software that dims the bulbs when sunlight is streaming into the building. This "daylighting" technology can slash energy use from lighting 75 percent during peak sunshine. U.K. retailer Tesco is rolling out a new green store design utilizing daylighting and other energy-efficient technologies that the company expects will cut total energy bills by 48 percent.

Update Heating and Cooling Systems

HVAC systems (short for heating, ventilation, and air-conditioning) hold so much potential for efficiency that some consultants will guarantee you savings. Semiconductor equipment maker Applied Materials hired an engineering firm to optimize its HVAC system at one of its California campuses. The firm promised a 20 percent efficiency improvement or it would forgo some fees, so the up-front risk to Applied Materials was low.

Applied will save up to \$1.2 million per year, and with rebates from local utility PG&E, the payback period should be about twelve months. For obvious reasons, Bruce Klafter, Applied Materials' senior director of sustainability, says this project is "something we can sell internally to finance and other decision makers, even in tight times."

Besides saving a ton of money for companies, changing lights and HVAC systems can make a significant dent in our national energy use—roughly 40 percent of total greenhouse emissions come from buildings.

2. Cool Down or Shut Off Your Technology: IT Expense Reduction

When industry analyst Gartner Group estimated that information and communications technology was responsible for 2 percent of global carbon emissions—equal to the entire aviation industry—most people outside the IT world (and many inside it) were shocked. After all, tech companies have no smokestacks, so they seem fairly clean and green. But everyone forgot that all those computers are energy hogs. An average data center uses as much energy as 25,000 households, and infotech use is only growing. There's a persistent and believable rumor that Google is the largest single energy user in the state of California.

Tech leaders now pitch IT solutions as the path to reducing "the other 98 percent" of emissions. The industry's approach is smart positioning, and it happens to have the added virtue of being true. Good data and technology are fundamental tools for helping companies know their environmental impacts, systematically reduce them, and find new ways to innovate (and I'll focus on these benefits in chapter 3).

But first let's take a look at IT energy use and expense and what's being done about it in three areas: (1) data centers, (2) corporate "fleets" of com-

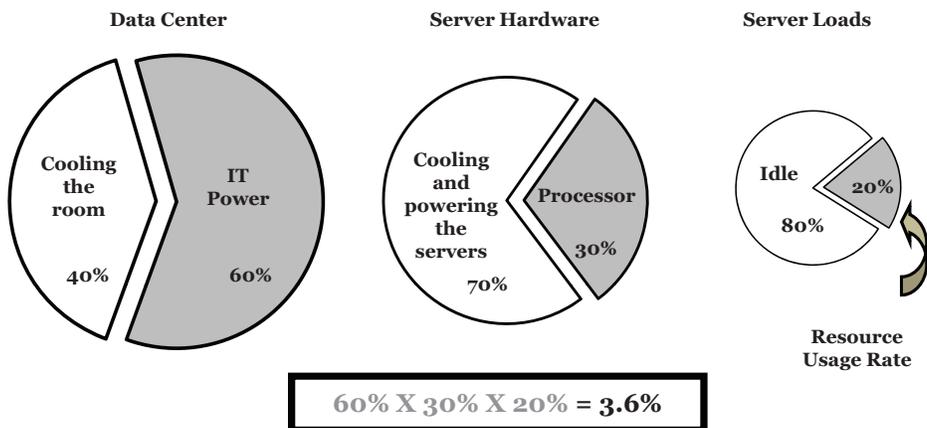
puters and other office technology (phones, routers, and so on), and (3) printing. Your company is surely spending far too much money powering equipment and printing documents, but the solutions are out there, and many are very cheap.

Shrink the Data Center Footprint

IT providers and users are waging a global attack on server farm design and equipment. Green Grid, a partnership founded by major tech companies such as Advanced Micro Devices (AMD), Dell, Hewlett-Packard (HP), IBM, Intel, and Microsoft, is developing new metrics and providing great information and tools for reducing a data center’s footprint. The problem everyone’s trying to solve is the shocking energy inefficiency of these number-crunching behemoths.

Of all the energy going into a modern server farm, IBM estimates, less than 4 percent actually processes something—you know, what the room was built for (see the figure “Energy Use in Data Centers”). The other 96 percent of electrons cool the room itself, cool the stacks or “blades” of servers, and keep idle machines humming. Much of this energy is wasted and costs real money. In recent years, the share of a data center’s variable cost going to energy has grown fast. What was once a tiny part of the budget is now 40 or 50 percent of the operating cost. Over the life of a server, you can easily spend twice as much on electricity as on the capital cost of the server itself.

Energy Use in Data Centers



Source: IBM

The data center. The energy problem is actually doubly wasteful: the servers generate heat (energy that's typically wasted), and then companies use more energy to pump in cool air to keep the machines from overheating. The solutions can be head-slappingly low tech. Yahoo! built a data center that uses 60 percent less energy for cooling by using a technique called *outside air economization*, which basically means opening the door and letting the hot air out. A study from Intel calculated that air cooling can cut the cost of a 10 megawatt data center by \$3 million. Not surprisingly, air cooling is one of the big recommendations from Green Grid as well.

Server hardware. In keeping with a theme in this book that investments are not the same as costs . . . sometimes, as the *Wall Street Journal* suggested in February 2009, "the smartest thing to do is invest in new, more efficient systems." The paper described how Fair Isaac Corporation, which runs customer credit scores for other companies and manages a lot of data, bought new, more efficient servers and cut the total number in its data processing center in half. You should also retire old equipment that may be powered on but has outlived its usefulness. Sun Microsystems instituted a "Bring Out Your Dead" program and collected 4,100 orphaned servers. As Sun's Dean Nelson, a senior-level executive in data center design, told me, "Data centers need spring cleaning just like your house."

Server loads. Idling remains a huge problem—average server utilization hovers around just 15 to 20 percent. Older servers, when idling, can burn up to 70 percent of the power of a server running full blast. Scott McNealy, chairman and cofounder of Sun Microsystems, says, "It's like parking your car in a garage at 55 mph overnight."

Why, you might ask, are there so many servers sitting idle? Companies keep 80 to 90 percent of the server capacity idle not to waste money, but to prepare for peak volume—basically, to avoid what happened to retailer J. Crew on Inauguration Day 2009. When Michelle Obama held the Bible for her husband's swearing-in, people noticed her green gloves from J. Crew. Within a few hours, the women's section on the company's Web site was down. Then the whole site crashed, which probably cost millions in lost sales. The news media lapped up the story. As Sun's vice president of energy efficiency, Subodh Bapat, says, "If you're the IT guy, you get paid to keep the site up . . . You're always worried about your CNN moment."

Many IT providers offer highly technical solutions to this problem, such as new server designs and programming strategies. The big new buzzword is

virtualization, which means using software to create pseudoservers that run in parallel on the same physical server and use all that idle processing power.

Addressing all three steps of the inefficiency problem can yield some impressive results. Sun consolidated one data center from 496,000 square feet to 126,000, saving millions in real estate and slashing electricity costs by \$1 million annually. The consolidation in just one Colorado data center cut Sun's total global carbon emissions by 5 percent.

Microsoft's data centers use 50 percent less energy than the ones the company built just three years ago. I asked Rob Bernard, Microsoft's chief environmental strategist, to talk about how the company accomplished this feat. Bernard boils data center greening down to a few ideas: "*Look at your energy bill, do a heat scan* (to figure out where energy waste is most problematic), *improve server utilization*, and if you don't manage your own data centers, *go look at your contract*." The last part is about the classic "landlord-tenant" problem. Providers will only have an incentive to save energy, and not just pass along costs, if customers start demanding it.

Mega IT buyers like Google and Microsoft have already started clamoring for change, and they're not alone. Tech analyst Forrester reported in January 2009 that 60 percent of IT managers are using green criteria in their procurement decisions and that even in tight times more managers are accelerating green IT efforts than slowing them down.

But what's the most powerful thing you can do to reduce IT energy use? Every time I speak to tech companies or sustainability execs, I hear one theme over and over: the people who create the energy use don't have a clue how much it's costing. The prescription:

Add the power bill to the CIO's budget.

Shut Down Office Computers and Other Equipment

A single new computer may not use an excessive amount of energy—about the same as a lightbulb. But add up the millions we leave on when we're not using them, and the waste is extensive and expensive. If users of Windows Vista employed the power-saving tools embedded in the ubiquitous operating system, the United States could, according to the Natural Resources Defense Council, "cut our nation's electric bill by about \$500 million per year, and prevent 3 million tons of global warming pollution."

But you don't necessarily need to *ask* all employees to put their computers into sleep mode to save money. Partners HealthCare in Boston uses software from Seattle-based Verdiem that allows the CIO to set rules about all of its 27,000 computers at once. Forcing all idle computers into standby mode, for example, can reduce energy use per PC by up to 60 percent. With this initiative, the company eliminated 5.5 million kilowatt-hours of electricity use and is saving \$1.4 million a year—money that can go to patient care instead of the local utility.

It's not just computers that suck up energy. Think of all the other office equipment, like phones, routers, and printers. When these devices are connected to a network, you have an opportunity to automate them as well. Cisco recently added a feature to its network management software that allows companies to set rules for other devices. Your retail store is closed for the day? Then turn off the phones and routers. On a global level, the savings could be noticeable. According to telecommunications research company Dell'Oro Group, there are 80 million network-connected phones out there. Shutting half of them down for half the day will apparently save 800 megawatts of energy, enough to power roughly 65,000 homes instead.

The savings for an individual building or company may be modest, but every little bit helps, and automation is nearly free to implement. Keeping things powered on when nobody is around is pretty ridiculous. As our machines and networks get smarter, we can stop this wasteful practice, cut emissions, and save some money.

Cut Back on the Printers and Print Less

It's surprising how many printers one company can amass. Over time, Dow Chemical's 333 sites in 49 countries collected 16,000 printing, copying, faxing, and scanning machines. Xerox redesigned Dow's system and cut that back to just 5,500 more centrally placed devices. Fewer machines draw less energy and employees generally print less, which saves even more energy and resources upstream in the supply chain (paper production is energy intensive).

Big deal, you might say. How much could printing cost? Ursula Burns, president of Xerox, estimates that many industries spend 3 to 5 percent of revenue on content and document management. That may sound absurdly high, but reducing and centralizing machines at Dow will save the company up to \$30 million in energy and materials over five years.

Granted, there were some cultural hurdles to overcome. Dow needed to get 42,000 people comfortable with the idea of walking down the hall to pick up a document. People love having their own printers in their offices. When I think about the challenge of taking away machines, I get a funny image of employees barricading their offices and, to paraphrase Charlton Heston's famous line about guns, saying that they'll only give up the printer if someone pries it from their cold, dead hands. Luckily, there's a good way to ease the transition.

Just as most CIOs don't see the cost of powering data centers, employees don't see the price of the printing services. Showing them the cost of the current system helps them get comfortable with change. But as Patty Calkins, vice president of environment for Xerox, says, "When people see how they're contributing to the *environmental* goal, it's easier to get their printers away from them. One customer felt that employees resonated with the environmental issue more than with delivering to the bottom line." In these tough times, both arguments—we'll save money and save the environment—help engage employees.

Getting leaner throughout the IT system will save a lot of cash. You can't see them, but electrons cost money. Getting leaner also means cutting back on big, physical things . . . like trucks.

3. Fill the Trucks, Drive Fewer Miles: Redesigning Distribution

Wal-Mart announced in February 2009 that it had improved the efficiency of its private fleet, one of the largest in the world, by 25 percent in just three years. To accomplish this feat, the giant retailer engaged in a range of efficiency activities, many of which—this being Wal-Mart—cost little money.

Blowing past its 25 percent goal, Wal-Mart announced it was experimenting with some new vehicle technologies, including hybrid electric power systems, trucks that use liquid natural gas, and engines that run on cooking grease from stores. In response to Wal-Mart and growing market demand in general, all the big truck manufacturers are rolling out new technologies that can improve fuel efficiency 40 percent or more. FedEx, Coca-Cola, Safeway, SC Johnson, Safeway, Nike, and many others are already trying out these new models.

Technologies both old and new are reducing the footprint of cargo transportation in every mode of travel. Airlines and freight carriers are changing

flight patterns and descending more smoothly to shave gallons. Cargo ships are experimenting with parachute-like sails and cushions of air (like hovercraft use) to reduce drag and improve fuel efficiency 15 to 40 percent. The shipping industry reports that fuel cells could reduce power consumption on ships in just a few years.

Reducing your distribution footprint will save money and help bolster your green claims. Even if you're outsourcing distribution, you can "look at your contract" and reduce your bills. It's been a time of rapid experimentation in how to move people and goods using as little fuel as possible (\$145-a-barrel oil in 2008 helped the cause). Many of the ideas, such as keeping tire pressure up, seem small, but all together the savings add up quickly. Other steps, like investing in newer trucks, may need to wait until you've freed up enough capital for the larger investments. Here are some suggestions for best practices, ranging roughly from least expensive to most capital intensive.

Train the Drivers and Slow Down

As with most improvements, start with the cheapest option, behavior change. *Coasting, slower acceleration and deceleration, and avoiding pumping the gas* all improve fuel economy. At the simplest level, *slowing down* saves fuel. Office-supply chain Staples set a *maximum speed* of 60 mph for its fleet, and megashipper Con-Way Freight estimates that lowering its speed limit from just 65 to 62 mph will save the company 3.2 million gallons of fuel. At peak prices, this small change would save \$15 million, or more than 20 percent of Con-Way's net income in 2008.

All trucks now come with electronic control modules that allow you to set maximum speeds, but not every company will adopt the practice. Seeking to level the playing field, in early 2009 the American Trucking Association (ATA) lobbied Congress to cap truck speeds at 65 mph. The ATA reports that driving at 75 mph uses 27 percent more fuel than moving at 65 mph. This cap, they say, could save literally billions of gallons. At first glance, restricting drivers would seem to slow down logistics. But in many cases, with fewer fill-ups, total time on the road stays flat.

Make Small, Focused Capital Improvements to the Fleet

As small as it sounds, the right *tire pressure*, or filling tires with nitrogen, can save 2 percent of fuel. *Tune-ups* and regular maintenance help as well. Wal-

Mart has improved fleet efficiency 6 percent by making friction-reducing, *fuel-efficient tires* the standard on all trucks.

Changes to the aerodynamic profile of vehicles, from *side wind skirts* to *bumpers that push air down*, start to pay off big at highway speeds. A *Fortune* magazine feature in February 2009 described how the trucking conglomerate Paccar is using supercomputers to redesign everything for aerodynamics, no matter how small—tweaking the shape of tire mud flaps will save each truck \$400 per year on fuel.

The low-capital ideas for getting leaner are coming out of the woodwork. Every time I speak at industry events, companies large and small approach me afterward with stories about their greening efforts. After I addressed the Food Shippers of America in March 2009, one small company told me about its “quilts” that cover pallets inside refrigerated trucks and hold the cold in. It’s a solution that’s a lot cheaper than buying a new, more insulated truck.

Stop Idling

Similar to data centers in IT, the biggest fuel waster in distribution is idling. Long-haul trucks spend a stunning 20 to 40 percent of their time idling, or, to put it another way, getting 0.0 miles per gallon. In milder climates, where truckers don’t need as much heating or cooling when resting, educating drivers about the cost of idling (in fuel use and wear and tear on the engine) goes a long way. But to really tackle the problem, you need some relatively simple technology.

Small *auxiliary power units* (APUs) allow truckers to turn off the engine when they’re sleeping or stopped for deliveries, saving more than 80 percent of the fuel wasted in idling. Wal-Mart says the APU alone improved overall fleet efficiency 8 percent and, like all the other small capital improvements, paid back in less than two years.

Fill the Trucks with New Loading and Shipping Procedures

The logic is hard to fight: if you *fit more stuff on a truck*, you’ll make fewer trips. Sometimes all it takes is redesigning pallets and loading practices to stack everything higher and tighter. Xerox reassigned deliveries to avoid sending big trucks when small ones would do. This “*rightsizing*” initiative, along with some other adjustments to routes, cut 21 million miles from Xerox’s distribution system.

Sentinel Transportation, a joint venture between DuPont and Conoco-Phillips, reduced the number of trucks leaving one DuPont site 55 percent by increasing the average payload in each truck 50 percent. For a major automotive customer, Sentinel cut distribution fuel costs in half, a much needed shot in the arm for a struggling industry. It accomplished this feat by sending a full truckload every two days instead of partial truckloads separately. If your fleet is not completely in your control, follow Kellogg's lead and share truck space with other companies to send out full loads.

Tighten Up the Distribution System

At the most basic level, reducing distances and trips cuts costs. Chinese shipping company Cosco redesigned its delivery system to eliminate miles and cut back from one hundred distribution centers to just forty. The company saved 23 percent on logistics costs and cut carbon dioxide emissions 15 percent.

Your distribution system may have evolved from demand patterns in the past or through inertia. It may not have been optimized to reduce miles. Using global positioning systems (GPS), companies small and large are optimizing delivery routes. UPS most famously redesigned its routes to reduce miles and make "no left turns" (because waiting to cross traffic wastes time, money, and fuel). The shipping giant saved \$3 million annually. A midsize laundry service company, Mac-Gray, used *GPS and other wireless technologies* to help its 400 technicians and coin collectors be more efficient. Total miles traveled dropped 15 percent while productivity shot up 20 percent. The payback was only eighteen months.

Shortening distances, shifting some shipping to rail, and many other large-scale approaches will make your distribution system leaner. But these classic strategies have taken on a new urgency and a heavy green tint. One large book publisher is planning to take over some steps in the distribution chain to reduce inventories. The goal is to replenish more quickly and print only based on demand. This plan should greatly reduce returns to the publisher, a big, expensive problem in the book business (the issue here is inventory control between the stores and the publisher, not the minor nuisance of consumers returning books). The initiative will require significant investment, but executives are moving in this direction because of the high profit potential. Reducing returns to zero would *double* the company's profitability.

But the plan also has some significant green benefits. It will reduce the miles traveled, the fuel used, and the books printed. Since paper production

is energy and resource intensive, printing less will reduce the company's life-cycle carbon footprint dramatically. The sustainability executive told me that the distribution managers are driving this initiative, so it's not *technically* a green project. But, he says, "It's actually the greenest thing we're doing."

Of all the options for reducing the distribution footprint, the fastest pay-offs will be changing driver behavior, setting maximum speeds, installing simple aerodynamic improvements like wind skirts, and investing in auxiliary power units. Other innovations from different parts of the business, particularly in packaging, will have large-scale impacts on shipping costs as well.

In short, the opportunities for making fleets more efficient are vast. For proof, look no further than the EPA SmartWay program and Web site, the ultimate repository of tools, stories, and advice on how to get lean in transportation. SmartWay reports that its 1,100 member companies are already saving 620 million gallons of diesel per year.

The bottom line is this: leading companies are proving that it's possible to improve fleet efficiency 25 percent or more using readily available technologies and techniques. If all private and public sector fleets achieved the same level of improvement, the United States could slash 100 million tons of greenhouse gas emissions and save some 10 billion gallons of fuel. The country as a whole would save—depending on diesel prices, which have ranged from \$2.00 to \$4.50 in recent years—roughly \$20 billion to \$45 billion.

4. Travel Less: Telecommuting and Teleconferencing

On top of moving goods more efficiently, we can change how much people move around. It seems like a small point, but you can save your company and employees a ton of money by enabling and allowing remote work.

Encourage Telecommuting

Sun Microsystems has become the poster child for flexible working arrangements. More than half of Sun's employees have no assigned desk, and nearly 19,000 telework at least part-time. Due in large part to enabling a more mobile workforce, the company downsized its office space 15 percent in 2007, avoiding \$64 million in real estate costs. A study of Sun's home-based employees revealed that they were working three more hours per week than their regular

coworkers (so much for work-life balance). The total energy footprint for those employees was down more than 5,000 kilowatt-hours per year. Employees were happier as well, since they saved two weeks of commute time per year and \$1,700 in gas and wear and tear on their cars.

If we scale these benefits up to the economy as a whole, we'll see some staggering numbers. By some estimates, about 40 percent of American workers could work at home half of the time. Kate Lister, coauthor of *Undress for Success*, a book about telework, says that if we moved those 50 million workers out of the office, "we'd save 450 million barrels of oil (almost 60% of our Gulf imports), the equivalent of taking 15 million cars off the road. If just a quarter of the traditional offices were 'lights out' while the e-Workers were at home, the energy saved would power 822,000 homes."

Sun and other companies have proved that the savings are real. So consider having some of your employees work from home a few days a week. The cultural shift at the company could take some time to get used to. But in these tight times, where layoffs are all too common, imagine telling employees that you're doing everything you can to keep them but they need to work from home more. Buy-in would be high.

Reduce Corporate Travel and Meet Virtually

Companies are taking a hard look at corporate travel, particularly in service businesses where it's often the largest part of the company's carbon footprint. While you shouldn't forgo critical face-to-face meetings with customers, you can experiment with reducing internal travel. When David Ratcliffe, CEO of electric utility Southern Company, talked to the *Wall Street Journal* in early 2009 about ways to cut costs in the downturn, he mentioned two items: slashing \$200 million from the capital expenditure budget by delaying some work on the physical plant and "more meetings with technology instead."

A number of companies, from Cisco and HP to niche players, have developed high-end teleconferencing systems that are, frankly, beautiful. The technology has come a long way from the days of herky-jerky motion and mismatched or delayed sound. You easily forget you're in a different city or continent from coworkers. The catch remains the high up-front cost for these quarter-million-dollar conferencing rooms. But the companies that have taken the leap and bought enough systems to see a network effect are cutting travel costs substantially. Procter & Gamble installed fifty studios in twenty-six countries, cutting 1,000 international flights and millions in travel expense every month.

Logically, service businesses like Deloitte and Accenture are also investing heavily in this technology.

Far cheaper than room-sized systems, Web-based meeting services also save money and connect people from a distance. Microsoft saved \$90 million from reduced travel by using telecommunication tools. A study conducted by the University of Bradford and the nonprofit SustainIT, both from the United Kingdom, looked at how British Telecom (BT) employees use a suite of conferencing and collaboration systems to work together. The report calculated that BT had saved, in one year, an astounding £238 million (\$330 million) in avoided travel costs and time conserved.

Between telework and telepresence, we may all spend the downturn in different rooms, but we'll be saving a lot of money and preserving capital for other strategic priorities.

5. Make Waste Pay: Reduction and Recycling

One of my favorite “reduce, reuse, recycle” stories comes from a Holiday Inn in New Orleans. After an aggressive waste-reduction initiative, the hotel asked the sanitation department to pick up the dumpster every fifteen days instead of every four. When city officials said they couldn't change the routes (they were somewhat busy with other priorities, like rebuilding the city after Hurricane Katrina), the hotel manager started renting out empty dumpster space to neighboring companies that were being fined for overflows. Waste literally became a source of revenue.

Or take Burt's Bees, the maker of natural lip balms and other personal care products, which set a goal of zero waste by 2020. In just two years, the company cut landfill deliveries from 29 tons per month to just 4—an 85 percent reduction, while the business grew 50 percent. The direct cost savings were moderate, maybe \$50,000. “Not ‘wow’ dollars,” says CEO John Replogle, “but waste hauling costs dropped like a stone, recycling is up four-fold, and we're getting paid for it.” The recycled materials market is down right now, but Replogle adds, “When that market comes back, we'll be better positioned and we'll see dramatic improvements to the P&L as a result.”

Waste reduction is a great mission for engaging employees. Ask people to track the flow and quantity of waste leaving their department or manufacturing line. Let people who ultimately cause the waste downstream—such as product designers or engineers who may not know what comes out at the

other end—see the repercussions of their decisions. As dirty as it sounds, a “Dumpsterdive” day where people measure and put a value on their waste can do wonders for awareness.

Even if the total amount of money remains negligible, the benefits of creating value from waste are more than just monetary. Imagine some of your operations people discovering that a cost center can actually make money. The search for savings or profit builds a lean mind-set that can eliminate waste in all forms, be it physical, electrical, or personal (people and their skills). In tight times, we can’t afford to waste any resource.

Ten Guidelines for Getting Lean

Going green in general is not easy; it takes planning and execution, like any effective strategy. But leaning your operations, a much more narrowly defined objective than greening your products and services, may be less challenging. The fruit is sitting on the ground, and many opportunities cost very little up front or pay back so fast that it’s worth stretching to free up the investment capital. As you explore easy targets and quick wins, keep in mind ten guidelines.

1. *Find the “head-slappers,”* such as using outside air to cool a data center or, on the flip side, shutting that outside air out to warm a room. One major manufacturer discovered that the big doors to the loading dock were open all day. It didn’t cost much to, you know, close them. We think we’re running lean, but then we discover something so obvious, we can’t believe it slipped by.
2. *Don’t worry about size.* Don’t look down your nose at small improvements. Each area may save a modest amount, but in total, you can make a noticeable dent in cash flow and profitability. Twenty changes of 1 percent each add up. Let them.
3. *Get everyone looking* for ways to cut back, and use cross-functional teams. (We’ll talk about getting people going in the next few chapters.)
4. *Change behaviors* to save money at nearly zero capital cost. When that doesn’t work . . .
5. *Automate as much as possible.* Don’t just ask everyone to turn off lights—use motion detectors and software.

6. *Don't reinvent the wheel.* Look to unbiased industry and government resources like Green Grid in IT or EPA's SmartWay program for shipping. These groups are dedicated to gathering information and best practices.
7. *Find partners and service providers* who want to reduce your costs and explore guarantees or profit sharing to reduce up-front costs.
8. *Set short-term goals.* Now is a good time for aggressive, but tactical, goals. Tell everyone to cut energy use 10 percent . . . by next month.
9. *Increase recycling,* and you may turn a cost into a small profit center.
10. *Reduce costs,* but don't stop investing. If there's a retrofit with a one-year payback, find a way to do it. It makes a big difference when you dedicate money specifically for green initiatives.

This last point is the most critical. Green projects may never get the focus they deserve without some specific money dedicated to the purpose. So do one thing above all others:

***Set aside money specifically for energy efficiency
or other green priorities.***

Why? Well let's return to DuPont, which invested \$50 million in energy reduction projects throughout 2008. The one-year payback was fantastic, but where did the initial money come from? The answer is simple, but powerful. The company's Bold Energy Plan set aside 1 percent of capital expenditures solely for energy-saving ideas. All projects still met the corporate hurdle rate, so there was no special dispensation besides making the money available for worthy initiatives that managers might normally overlook.

Owens Corning leverages the same tool, but to an even larger extent. The building materials manufacturer best known for its pink insulation dedicates 10 percent of all capital expenditures to energy projects. When executives set aside these funds, they unleashed a wave of creativity and short paybacks.

If there are so many quick, high-ROI projects sitting around, why aren't companies jumping on them anyway? Two big reasons. First, energy efficiency just hasn't seemed sexy. Dawn Rittenhouse, DuPont's director of sustainable development, says, "If business units can invest in growth or

energy-efficiency projects, it's more glamorous to go after growth." But in a downturn, saving money starts to feel a lot more exciting, doesn't it?

The second reason is the classic problem of the urgent versus the important. Most capital expenditures go to fix things that are broken. We can't help but focus on what's leaking. At Owens Corning, people were excited to move beyond those pressing concerns and get ahead of future emergencies. But as Frank O'Brien-Bernini, the company's chief sustainability officer, puts it, "It's really about redefining what 'broken' means." Think about it: something that uses more energy than it should may not feel broken with oil at \$40 a barrel, but may look like a money-eating disaster at \$200 a barrel. As O'Brien-Bernini and I kicked this idea around, he added, "If your car is sitting in the driveway and you're not using it, it could be because it's literally broken, or because you can't afford to fill the tank . . . which is just as good as broken."

When it comes to energy and resource efficiency, *all* companies are broken. Our economy is broken too. Besides the obvious short-term problem of credit systems grinding to a halt, at a more basic level, we rely nearly entirely on energy from fuels that damage our health or force us to send hundreds of billions of dollars to people who don't like us very much. We've taken an "energy and resources are free" path for generations and ignored the real costs. We need a new look at how we design, produce, ship, and consume things. Without getting leaner, we may find that it's too expensive to run not just the car in the driveway, but entire segments of our economy.

Part of building a leaner, greener, cleaner, healthier, and more secure economy will be redesigning our economic relationship with natural resources. It starts with companies changing their views on energy and waste. It also starts with getting leaner in some quick-win areas like our buildings, our technology, and our distribution systems. Getting lean will free up capital both for survival and for investing in the future.

But first we need to get smarter.

For the full story on going green in hard times, please look for *Green Recovery: Get Lean, Get Smart, and Emerge from the Downturn on Top* (Harvard Business Press) in stores and online in August 2009. The table of contents is included here for your reference.

Green Recovery

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