

# Cashing in on Energy Efficiency



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# Introduction

A new generation of energy efficiency technologies are presenting America's commercial property owners, tenants and contractors with a several hundred billion dollar opportunity.

This opportunity results from the fact that an average commercial building wastes about 30% of the energy that owners and tenants pay for. On an annual basis, wasted energy costs owners and tenants more than \$60 billion, which is equivalent to:

- \$60 billion in lost business profits
- \$857 billion in lost capitalized asset value (at a 7.0% cap. rate).
- Funding for 1.3 million jobs (at the 2013 average wage of \$45,790).

Considering the size of this opportunity, and the fact that many simple, inexpensive solutions are readily available . . . one would think that energy efficiency improvements would be selling like hot cakes. Unfortunately, that is not the case.

The bad news is that seven formidable problems stand in the way of reducing energy expense.

The good news is that forward-thinking property owners, managers, tenants and contractors are finding ways over, under and around them.

We dedicate this eBook to the property owners, managers, engineers and contractors who are seizing the day.

The energy efficiency opportunity is tipping.

Carpe diem!

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## CHAPTER 1

# The Energy Efficiency Opportunity

According to the US Department of Energy (DOE), more than 4.2 million commercial buildings waste an average 30% of the energy that owners and tenants pay for. During 2007 (latest figures), the DOE estimated the annual cost of that wasted expense at \$60.7 billion, equivalent to:

- \$60.7 billion of lost business profits
- Funding for 1.3 million jobs (at the 2013 U.S. average wage of \$45,790).
- \$857 billion dollars in capitalized real estate asset value (at a 7.0% cap. rate).

According to the Energy Star program, energy bills are the single largest non-salary related operating expense in commercial office buildings, representing approximately one-third of typical operating budgets.

Energy Star also reports that energy use in commercial buildings accounts for almost 20% of the nation's annual greenhouse gas emissions.

The U.S. Environmental Protection Agency (EPA) reports that electricity generation is the dominant industrial source of harmful air emissions in the United States.

Fossil fuel-fired power plants produce:

- 67% of the nation's sulfur dioxide emissions
- 23% of nitrogen oxide emissions, and
- 40% of man-made carbon dioxide emissions.

By wasting almost one-third of the energy that building owners and tenants buy, commercial buildings make a substantial and unnecessary contribution to these emissions.

From both a financial and sustainability perspective, improving energy efficiency in America's commercial buildings presents a golden opportunity to property owners, managers, tenants, and contractors.



## The Opportunity for Owners

For owners who occupy their own buildings, the opportunity to reduce energy bills by 30%, or more, is financially compelling. Reducing energy expense can have a highly leveraged impact on net operating income (NOI) and capitalized asset value.

For owners of leased buildings, a growing body of evidence indicates that energy-efficient buildings achieve higher occupancies, higher lease rates and higher capitalized asset values.

The following are brief summaries of recent studies that explore how energy efficiency improvements impact capitalized asset value.

Each summary is followed by a “See the Study” link to the full study text:



- The Cushman & Wakefield report ***US INVESTOR SURVEY - THE OWNERSHIP VIEW OF SUSTAINABLE REAL ESTATE*** (2013) found that:
  - Real estate investors across the US are clearly demanding their investment managers acquire properties that address sustainability.
  - Momentum for sustainable investing is growing, yet most owners have not developed mandated sustainability requirements for their properties or portfolios.
  - A property’s sustainability performance has a positive correlation to its value. Sustainable real estate practices have become a top priority for anyone who owns or occupies commercial property.
  - Today’s leading corporations realize that environmental responsibility is essential to business operations. Taking steps to reduce energy usage not only reduces costs, but can also enhance a corporation’s brand and customer appeal.
  - Although value varies from market to market, sustainability’s impact can be significant in making a property more competitive and assisting in a more rapid lease-up.

[See the Study \\*](#)

\***Note:** [See the Study](#) is a link to original source document.

- The Institute for Building Efficiency’s ***Green Building Asset Valuation: Trends and Data Research Snapshot - Do Green Buildings Translate to Higher Asset Value?*** (2011) notes that:

“With 1.5 billion square feet of LEED-certified space and 2.5 billion square feet of ENERGY STAR-certified commercial space in the market today, there is an ever more robust set of data for analysis to demonstrate statistically significant financial benefits of energy efficient buildings.”

This compendium of studies references the following findings:

1. Energy Star properties had a rental premium of 4.8%, or \$1.26 per square foot. (Pivo, 2008)
2. Energy Star properties had a 13.5% higher market value relative to non-Energy Star properties. (Pivo, 2008)
3. A sale price premium of 19% was found for Energy Star offices between 2004 and 2007. (Eichholtz, 2009)
4. A sale price premium of 13% was found for ENERGY STAR and LEED office buildings between 2007 and 2009. (Eichholtz, 2010)
5. A sale price premium of 31% was reported for ENERGY STAR and 35% for LEED-certified offices. (Fuerst, 2009)

This report concludes that “Evidence strongly shows that . . . energy efficient green buildings are translating into greater value in the form of increased rental rates, higher sale prices, increased occupancy rates, lower operating expenses, higher net operating income, lower capitalization rates, and increased worker productivity.”

[See the Study](#)

- The study, ***Green Noise or Green Value? Measuring the Price Effects of Environmental Certification in Commercial Buildings*** draws on the U.S. CoStar commercial real estate database to measure the effect of certification on both rental income and asset sale prices of commercial real estate.

The analysis concludes that, compared to buildings in the same metropolitan region, certified buildings (e.g. buildings with Energy Star or LEED certifications) have both rental rate and sale price premiums.

Two key findings:

- “From the asset price perspective, it is expected that investors’ holding costs [in certified buildings] should be lower due to attractiveness to occupiers associated with business performance, image and lower running costs. This can lead to a rental premium and/or lower vacancy rates.”
- “Our study provides preliminary support for the price premium hypothesis. The . . . results suggest that certified green buildings obtain higher rents, have lower vacancy rates and sell for more than non-certified buildings. In addition, there is evidence to suggest that the more highly rated that buildings are, the greater the premium.”

[See the Study](#)

- The U.S. government-backed Energy Star program published a document titled ***Commercial Real Estate: An Overview of Energy Use and Energy Efficiency Opportunities*** (2009). This study reports that:

- “Energy use is the single largest operating expense in commercial office buildings, representing approximately one-third of typical operating budgets . . .”

“By becoming more energy efficient, commercial real estate (CRE) organizations can reduce operating expenses, increase property asset value, and enhance the comfort of their tenants.”

- “ENERGY STAR calculates that a 10 percent decrease in energy use could lead to a 1.5 percent increase in net operating income (NOI).

In a 200,000-square foot office building that pays \$2 per square foot in energy costs, a 10 percent reduction in energy consumption can translate into an additional \$40,000 of NOI. At a cap rate of 8 percent, this could mean a potential asset value boost of \$500,000!”

[See the Study](#)

- The Johnson Controls study ***Green Building Asset Valuation: Trends and Data*** assembled data from a number of studies. The study concluded that Energy Star and LEED buildings:

1. Garnered rental rate premiums of 2% to 17%
2. Improved resale value: 5.8-35%
3. Enjoyed higher occupancy rates of 2% to 18%

[See the Study](#)

- According to the Rocky Mountain Institute report ***Beyond the Tip of the Energy Iceberg: Why Retrofits Create More Value Than You Think***, a growing body of statistical evidence suggests that green office buildings can command rent premiums of 3% to 6% and sales price premiums of 10% or more.

[See the Study](#)

Clearly, property owners have an opportunity to increase asset value by (at least) \$857 billion. In the following chapters we will discuss the barriers that have prevented owners from seizing the day. Then we will look at how implementing an energy efficiency continuous improvement process can help owners cash in on this tremendous opportunity.

## The Opportunity for Tenants

For business tenants, improving energy efficiency can be a tremendous financial opportunity because . . . every dollar saved can be equivalent to as much as \$100.00 of additional sales.

Here are a few examples:

- For a business that operates on a 10% net profit margin, every \$1.00 of saved energy expense is equivalent to an additional \$10.00 in sales.
- For a business that operates on a 5% net profit margin, every \$1.00 of saved energy expense is equivalent to an additional \$20.00 in sales.
- For a business that operates on a 1% net profit margin, every \$1.00 of energy expense saved is equivalent to an additional \$100.00 in sales.



In addition to financial benefits, occupying a “greener” and more sustainable building can make a valuable contribution to brand equity. From many customers’ points of view, companies that care about sustainability occupy sustainable buildings. For companies that occupy obviously less than sustainable buildings, the opposite is true.

In the following chapters we will discuss the barriers that have prevented tenants from negotiating energy efficiency improvements. Then we will look at how tenants are taking a seat at the repair and maintenance (R&M), tenant improvement (TI) and renovation planning table to make energy cost savings happen.



## The Opportunity for Contractors

A Bloomberg News article ***Renovations Rise as U.S. Companies Forgo New Buildings: EcoPulse*** (September, 2013), reported that “Major alteration projects -- those costing more than \$100,000 -- climbed as a share of total nonresidential construction as the recession began and haven’t yet come down.”

In this article, Robert Murray, Vice President of Economic Affairs at McGraw Hill Construction, notes that upgrades generally are viewed by companies as a “less risky investment” than building new structures and “the still cautious environment for development is contributing to the continued high share of alteration work.” [See the Study](#)



### **\$50 Billion of Energy Efficient Work**

Several studies indicate that contractors who can help owners understand their energy efficiency options have a substantial advantage in competing for more than \$50 billion of energy efficient repair and maintenance, tenant improvement and renovation projects:

- The McGraw Hill Construction Report ***Business Case for Energy Efficient Building Retrofit and Renovation*** (2010) notes:

“Despite the fact that retrofit activity remained active during the down economy, only a tiny portion of the U.S. building stock has been affected. The opportunity has never been greater. We merely need to help create and seize those opportunities.”

“McGraw-Hill Construction expects continued growth in major commercial renovation activity over the next five years, with \$53 billion anticipated by 2014 for major projects, a large portion of which includes energy efficiency investments . . .”

[See the Study](#)

- The McGraw Hill Construction Report ***Booming Green Opportunities in U.S. Construction*** (2012) makes the following observations:
  - During the year 2015, the market for energy efficiency building retrofit projects and renovations will be \$57.5 billion.
  - The decision makers who influence “green” and energy efficiency improvement decisions include Property Owners (96%), Property Managers (85%) and Tenants (50%).

- The primary motives influencing energy efficiency investment decisions include:
  - ✓ Operating cost savings
  - ✓ ROI and building value
  - ✓ Occupant benefits

[See the Study](#)

- The Rockefeller Foundation report ***United States Building Energy Efficiency Retrofits*** (2012) estimates the market for energy efficiency retrofits in commercial buildings to be approximately \$72 billion and the corresponding market in industrial buildings to be approximately \$25 billion.

[See the Study](#)

As property owners invest in energy efficiency improvements, the contractors who work with them have a \$50 billion opportunity. In the following chapters we will discuss the barriers that have prevented contractors from winning that energy-efficient work to-date. Then we will look at how contractors can cash in on this tremendous financial opportunity.

## The Opportunity for a More Sustainable World

Improving energy efficiency in commercial buildings has potential to make a very big contribution to reducing environmental pollution.

According to the American Lung Association:

- Coal-fired power plants produce more hazardous air pollution in the United States than any other industrial pollution source;
- More than 400 coal-fired power plants located in 46 states across the country release in excess of 386,000 tons of hazardous air pollutants into the atmosphere each year.
- Particle pollution from power plants is estimated to kill approximately 13,000 people a year.



As early as 1977, a USA National Academy of Sciences report concluded that "the primary limiting factor on energy production from fossil fuels over the next few centuries may turn out to be the climatic effects of the release of carbon dioxide."

Today, the inexorable increase of CO<sub>2</sub> levels in the atmosphere, coupled with concern about their climate effect, is a very significant factor in initiatives to reduce the use of coal-fired energy.

Building owners, tenants and contractors who contribute to energy efficiency make a very real contribution to reducing sulfur dioxide emissions, nitrogen oxide and man-made carbon dioxide emissions.

This opportunity to contribute to a more sustainable environment could be the biggest win of all for America's current and future generations.

## So Much Opportunity . . . Yet So Little Action

Despite the tremendous financial and environmental opportunities that are on the table, very few commercial real estate owners have made significant energy efficiency investments. Very few tenants have benefited from energy efficiency improvements; and very few contractors have taken advantage of the emerging energy efficiency opportunity.

- The Deloitte survey, *reSources* (2012), found that 90 percent of companies surveyed had energy management goals; and more than two-thirds identified reducing energy cost as their primary motive.

Yet, the survey also found that very few companies have made significant energy efficiency improvements.

[See the Study](#)

- McGraw-Hill's *Business Case for Energy Efficient Building Retrofit and Renovation* – (2011) makes a similar point. This survey notes that: “Despite the fact that retrofit activity remained active during the down economy, only a tiny portion of the U.S. building stock has been affected.”

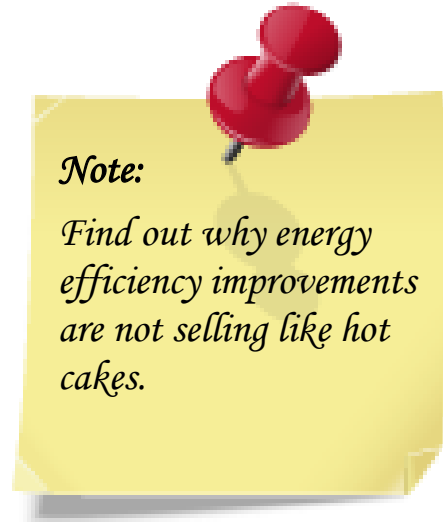
[See the Study](#)

- The McKinsey & Co. report *Energy efficiency: A compelling global resource* (2010) concludes that “Energy efficiency offers a vast, low-cost energy resource for the US economy – but only if the nation can craft a comprehensive and innovative approach to unlock it.”

“Significant and persistent barriers will need to be addressed at multiple levels to stimulate demand for energy efficiency . . .”

[See the Study](#)

Energy efficiency improvements should be selling like hot cakes. But, that is not the case. Unfortunately, there's a problem. Actually, seven substantial problems stand in the way.



## CHAPTER 2

# Seven Problems Stand in the Way

Energy efficiency improvements should be selling like hot cakes. But, they are not because seven problems stand in the way.

The “bad news” is that each of these problems is a serious road block. The good news is that innovative owners, managers, tenants, and contractors are finding ways over, under, and around them.

In this chapter we will take a brief look at each of these problems. Then, in Chapter 3, we will look at a powerful process that owners, managers, tenants and contractors are using to solve them.



### Problem #1

#### It's the Economy, Stupid!

During Bill Clinton's 1992 presidential campaign, a sign over his desk read “It's the economy, Stupid!” The purpose of the sign was to keep Clinton focused on the key issue . . . a struggling national economy that was preventing a number of good things, including energy efficiency improvements, from happening.

The parallels between the political and economic situation during 1992 and the corresponding situation today, are remarkable:

- During 1992, the United States was in a deep recession. Today, the U.S. continues to be under the cloud of the “Great Recession” of 2007 to 2009.
- Even when the early 90's Clinton economy began recovering (during 1992), economic growth was virtually imperceptible and the federal deficit continued to mount, propelled by dramatic increases in health care expenditures.

In the words of baseball legend Yogi Berra, today's situation is “deja vu all over again.”

Without a doubt, the primary reason that energy efficiency improvements are not selling like hot cakes is the anemic economic recovery in the United States. “It's the economy, Stupid!”

## Problem #2

### Improving Energy Efficiency is Capital Intensive

Most property owners *incorrectly* believe that improving energy efficiency is a capital intensive process (Problem #2).

This *incorrect* belief results from the fact that property owners and managers have been barraged by product sales people attempting to sell them (generally very expensive) “magic bullets.”

In the midst of a challenging economy (Problem #1), Problem #2 is a strong deterrent to energy efficiency investment.

## Problem #3

### Energy Efficiency is Not a Product

Closely related to Problem #2 is the *incorrect* belief that improving energy efficiency is all about buying expensive *products* (Problem #3). This incorrect belief is a result of the same sales calls that create Problem #2.

As we will discuss in Chapter 4, reducing energy bills is not about products. Reducing energy bills, on an affordable basis, is all about implementing a continuous improvement *process*.

## Problem #4

### Owners Invest . . . While Tenants Benefit

Another barrier to energy efficiency improvement is the fact that “owners pay for energy efficiency improvements . . . while tenants enjoy the financial benefits that result from them.”

This problem arises because the majority of commercial buildings in the U.S. are leased; and most tenants pay their own utility bills. This being the case . . . owners (*who incorrectly* believe that energy efficiency improvements are necessarily costly) fail to make the inexpensive improvements that can increase tenant attraction, retention and capitalized asset value.

Combined with Problems #1, 2 and 3, Problem 4 raises a very high barrier to energy efficiency investment in leased buildings.

## Problem #5

### Property Managers and Financial Managers Speak Different Languages

Property managers could dispel a great deal of the concerns caused by Problems #1 through #4 if they spoke the same language as financial managers. Unfortunately, they do not.

Problem #5 arises when a property manager requests funding for energy efficiency improvements that will attract or retain tenants and possibly reduce operating expense.

That rationale makes good sense to the property manager. But, it fails to get financial managers, or other people who think like financial managers, excited.

While the property manager is thinking about tenant attraction, retention and operating expense . . . the financial manager is thinking about the cost of capital, impact on the balance sheet, risk/reward ratios and the amount of time that will be required for return of the investment.

The different perspectives that property managers and financial managers bring to evaluating energy efficiency investments is yet one more barrier to making energy efficiency improvements happen.

## Problem #6

### Management Companies and Owners Disconnect

Management companies and owners of smaller commercial buildings disconnect when it comes to improving energy efficiency because small properties pay small management fees. As a result, management companies cannot afford to provide them with the same level of advisory services that they provide to large properties (which pay large management fees).

This is a huge disconnect because roughly 95% of the almost five million commercial properties in the United States are smaller . . . less than 100,000 square feet. The majority are smaller than 50,000 square feet.

The inability of management companies to provide small properties with big energy efficiency advisory services is a big disconnect.

And, last but not least, Problem #7 . . .

## Problem #7

### No One Wants To Do an Energy Audit

Any financially responsible energy efficiency investment has to be based on measured knowledge of how and where a building consumes energy. In buildings that do not have energy monitoring equipment (the vast majority of commercial buildings), the only reliable way to gather this information is by performing a hands-on, ASHRAE-compliant, energy audit.

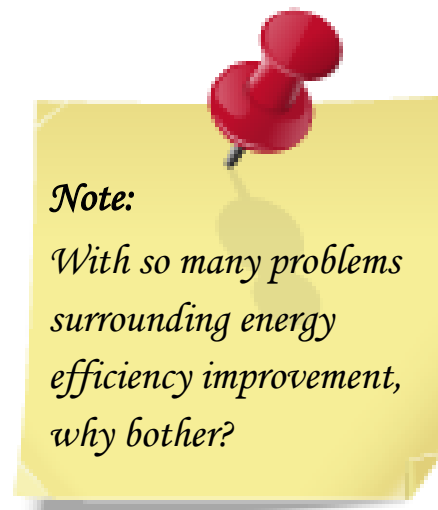
A competent energy audit is performed by a qualified individual (likely an engineer, certified energy manager or mechanical contractor) and involves a great deal of work. First, the auditor must inventory every energy-consuming piece of equipment (right down to the last light bulb) and estimate the energy consumption of each. Then, based on these findings and additional observations, they will research and a variety of potential energy efficiency improvements and estimate the cost and annual cost savings benefits of each. Next, they will prepare a comprehensive report that includes their field notes and possibly some photos; and finally, they will present their findings and provide additional consultation.

This process typically requires 100 person-hours, or more, and may cost \$10,000 to more than \$20,000. Given the magnitude of work involved, few competent auditors will discount these prices. At the same time, few building owners are willing to pay them.

Problem #7 is just one more reason that energy efficiency investments are slow to happen.

### So Many Problems!

Besieged by these problems (and others), very few property owners are cashing in on energy efficiency opportunities.





## CHAPTER 3

# Show Me The Money!

In the 1996 film *Jerry Maguire*, Tom Cruise plays Jerry Maguire, a sports agent for NFL football player Rod Tidwell (played by Cuba Gooding, Jr.). As a sports agent, Jerry Maguire (Tom Cruise) is down on his luck. He has lost every one of his star clients except Rod Tidwell.

In the famous “Show me the money!” scene Jerry is meeting with Rod, assuming that Rod will fire him also. As the scene starts, Rod is telling Jerry that he will keep him on as his agent. Then, this dialogue ensues:

Jerry Maguire: That's great. I'm very... happy.

Rod Tidwell: That's what I'm gonna do for you. God bless you, Jerry. Now this is what you're gonna do for me. You listening?

Jerry Maguire: Yeah, yeah, what can I do for YOU, Rod?

Rod Tidwell: It's a very personal, very important thing. Hell, it's a family motto. Now are you ready? Just checking to make sure you're ready (Rod turns his boom box real low) here it is - show me the money. (He now blasts the boom box at full level) OHHH! SHOW! ME! THE! MONEY! Doesn't it make you feel good just to say that, Jerry? Say it with me one time brother!

Jerry Maguire: . . . Show you the money.

Rod Tidwell: Oh, come on, you can do better than that! I want you to say it brother with meaning! Hey, I got Bob Sugar on the other line I better hear you say it!

Jerry Maguire: Yeah, ye - no, show you the money!

Rod Tidwell: AH! Not show YOU! Show ME the money!

Jerry Maguire: Show me the money!

Rod Tidwell: Yeah, that's it brother but you got to yell that sh\*\*!

Jerry Maguire: Show me the money!

Rod Tidwell: Louder!

Jerry Maguire: Show me the money!”

Source: Wikiquotes, [http://en.wikiquote.org/wiki/Rod\\_Tidwell](http://en.wikiquote.org/wiki/Rod_Tidwell)

Commercial property owners, tenants and contractors all have one thing in common with Rod Tidwell. They all want energy efficiency improvements to “Show me the money!”

## What Owners Want

Property owners invest in energy efficiency to reduce their energy bills because reducing energy bills can increase the value of their property:

- In owner occupied buildings, reducing energy bills can reduce operating expense . . . which can increase net operating income . . . which can increase capitalized asset value.
- In leased buildings, reducing energy bills can reduce tenants’ operating expense . . . which can increase tenant attraction and retention . . . which can increase net operating income and capitalized asset value.



Here’s an example:

In a 100,000 sq. ft. building that pays \$2.00 per sq. ft. for energy, a 30% reduction in energy cost could produce \$60,000 in additional net operating income (NOI). At a 7.0% capitalization rate, \$60,000 in newfound NOI is equivalent to an \$857,000 increase in capitalized asset value.

## The Devil is in the Details

On the surface, investing in energy efficiency to improve asset value just makes good sense. Unfortunately, however, there is a devil (actually two devils) in the details:

- DEVIL #1  
The first devil is owners’ *incorrect* belief that making energy efficiency improvements requires a large capital investment (Problem #2 discussed in Chapter 2).
- DEVIL #2  
The second devil is the fact that most commercial buildings are small (<50,000 sq. ft.); and most small buildings have small budgets for capital improvements.

Combined, these two devils make reducing energy bills devilishly challenging.

What owners want their managers and contractors to do, with respect to improving energy efficiency, is make well strategized investments that “Show me the money!”

## What Tenants Want

Tenants really appreciate it when landlord's help them reduce their energy bills. Most do not expect instant energy cost reduction miracles. But, they do appreciate being invited to the energy efficiency planning table.

Tenants are increasingly aware that even a small energy efficiency improvement can make their business a great deal more profitable.

Here are a few examples of the contribution that reducing energy expense can make to bottom line profitability:

- For a business that operates on a 10% net profit margin, every \$1.00 of saved energy expense is equivalent to an additional \$10.00 in sales.
- For a business that operates on a 5% net profit margin, every \$1.00 of saved energy expense saved is equivalent to an additional \$20.00 in sales.
- For a business that operates on a 1% net profit margin, every \$1.00 of energy expense saved is equivalent to an additional \$100.00 in sales.



What tenants want from energy efficiency is for their landlords to make improvements that “Show me the money!”

## What Contractors Want

What contractors want, as a result of helping owners improve energy efficiency, is to win more bids and to build long-term customer relationships.

Today, very few general or specialty trades contractors help owners understand their full range of energy efficiency options in ongoing repair and maintenance, tenant improvement and renovation projects.

Contractors who do provide this expertise enjoy a distinct advantage in competing for more than \$50 billion of energy efficient R & M, TI and renovation projects.

The McGraw-Hill study *Business Case for Energy Efficient Building Retrofit and Renovation* forecasts:

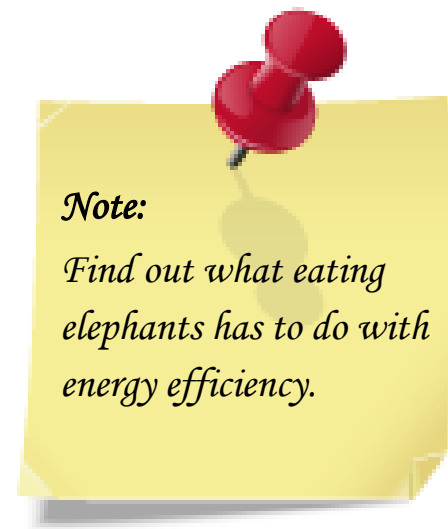
“ . . . continued growth in major commercial renovation activity, over the next five years, with \$53 billion anticipated by 2014 for major projects, a large portion of which includes energy efficiency investments.”

[See the Study](#)

With more than \$50 billion in energy efficient projects taking place, contractors want these opportunities to “Show me the money!”

## So, What Happens Next?

Before owners, tenants or contractors can expect energy efficiency opportunities to “Show me the money!” some big elephants will have to be confronted and eaten.



## CHAPTER 4

# Eating Energy Efficiency Elephants

Question: How do you eat an elephant?

Answer: One bite at a time.

While *real* elephants need to be vigorously protected (as opposed to being eaten) . . . elephant-size problems sometimes need to be confronted.

Energy waste in commercial buildings is an elephant-size problem; and the best way to eat an energy efficiency elephant is *one bite at a time* . . . through a continuous improvement process.

### 3 Choices

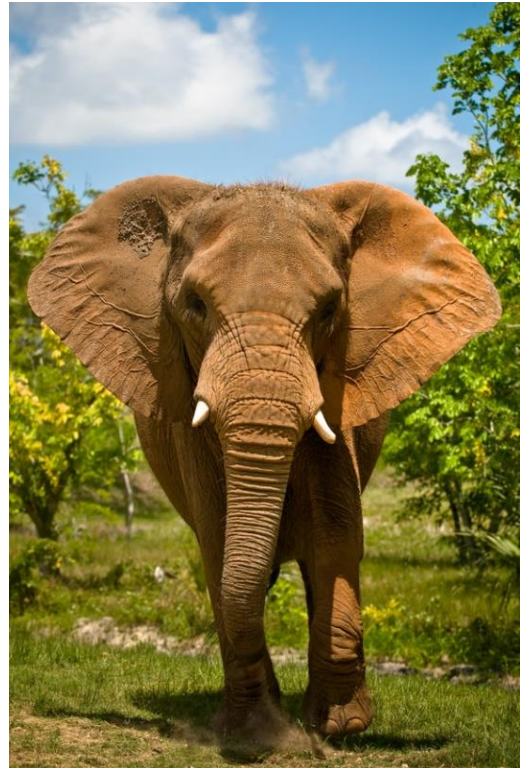
When it comes to eating their energy efficiency elephants, building owners have three choices. They can:

1. Ignore their elephants, regardless of consequences.
2. Swallow their elephants, whole, in one big gulp.
3. Eat their elephants, one bite at a time, by making continuous improvements as part of their repair and maintenance, tenant improvement and renovation projects.

Pursuing the first option is easy. It requires continuing down a deferred maintenance path with no concern for occupant's energy bills, comfort and safety, tenant attraction and retention, or property value.

The second option has been elected by a very small number of owners. Most have found this path to be capital intensive and financially uncertain.

The third option involves implementing energy efficiency as continuous improvements. This option reduces financial risk and minimizes the required investments. It is becoming the option of choice for an increasing number of property owners.



## What Continuous Improvement Is

Because this eBook is, essentially, about energy efficiency continuous improvement . . . it seems worthwhile sharing a few paragraphs to clarify exactly what continuous improvement is.

The explanation starts with Dr. W. Edwards Deming and his work in Japan shortly after World War II. At that time, Japanese industry was facing overwhelming post-war challenges. To help these industries deal with those challenges (particularly extremely scarce resources), Deming taught them how to make their business processes more effective, more efficient and more productive, one small step at a time.

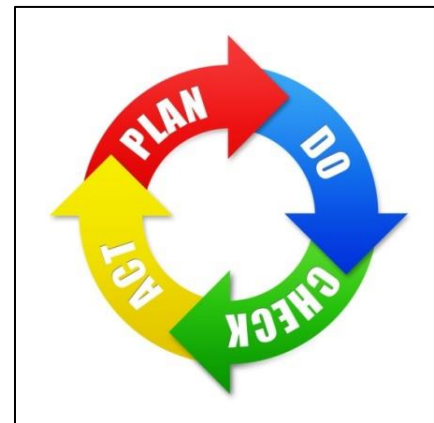
By the 1970s, the continuous improvement processes that Deming and others pioneered were widely embraced by Japanese companies. As a result, many were blowing the doors off of their American and European competitors (particularly in the technology and automobile industries). The dramatic competitive emergence of Toyota and Honda are good examples.

By 1980, companies world-wide (and particularly in the United States) were adopting continuous improvement processes out of competitive necessity. Under programs with titles such as *Just in Time*, *Total Quality Management*, *Kaizen*, *Lean* and *Six Sigma*, continuous improvement became a best practice in thousands of organizations including Xerox, Ford, Honda, Motorola, Apple, American Airlines, Accenture, Airbus, Yahoo!, Freightliner, Oracle, Johnnie Walker, TECO Energy, Florida Power and Light, the City of Madison WI, and the U.S. Navy, Air Force and the U.S. Forest Service (just to name a few).

## How Continuous Improvement Works

The generic continuous improvement model is referred to as the **PDCA** (Plan, Do, Check, Act) cycle and has four basic steps:

1. The first step, **PLAN**, involves identifying a problem or opportunity and developing a plan to do something about it.
2. In the second step, **DO**, the planner takes action.
3. In the third step, **CHECK**, results are measured.
4. In the fourth step, **ACT**, the planner determines what to do next.



In successful projects, this PDCA cycle may be repeated over and over again, often with increasing investments that produce ever-greater success.

# The PDCA Cycle in Commercial Real Estate

Most real estate improvement projects (such as repairs and maintenance, tenant improvements and renovations) utilize the PDCA methodology, or a variation thereof. Typically:

In **Step 1 – PLAN**, an owner or property manager:

- Identifies the R & M, TI and renovation projects that will be undertaken during the next operating cycle (generally the next calendar year).
- Develops a list of specifications for each project, and a tentative budget.
- Determines whether the project will be completed in-house or by a contractor.
- Considers in-house cost estimates and bids submitted by contractors.
- Selects winning bidders and schedules projects.

In **Step 2 – DO**, the facilities staff or contractor goes to work and does their best to complete the project on-time, on-budget and in accordance plans and specifications.

In **Step 3 – CHECK**, the owner and/or manager evaluates results, and

In **Step 4 – ACT**, the owner and/or manager decides what to do next.

## Implementing Energy Efficiency Improvements in Step 1

Implementing energy efficiency as a continuous improvement process involves adding two activities to Step 1 planning for R & M, TI and renovation projects:

1. **A baseline energy assessment** is completed to identify how and where the building consumes energy. This information may be generated by an ASHRAE-compliant energy audit; or it may be provided by energy monitoring equipment.

Planners (generally owners and property managers) use this baseline information to set priorities for energy efficiency improvements and to request proposals from appropriate contractors.

2. **Energy efficiency improvement** proposals are considered, as possible components, of ongoing R & M, TI and renovation projects.

Adding these two activities to Step 1 planning can make energy efficiency improvement an affordable, less risky and highly leveraged investment. Let's take a closer look at each of these Step 1 activities . . .



## 1. Perform a Baseline Energy Assessment

This is the first and most critical step in implementing an energy efficiency continuous improvement process because *you cannot manage what you do not measure*.

In order to make good investment decisions, an owner needs to know how and where their building consumes energy. They need to know how much expense each energy system and each sub-optimal building condition is contributing to the building's energy bills.

The *only way* to obtain this information is by either monitoring the building's electrical circuits, or by performing a *hands-on*, ASHRAE-compliant commercial energy audit.



**Warning** - So-called “remote,” “virtual” and “zero touch” energy assessments do not provide adequate information for making financially responsible energy efficiency investment decisions.

Because every commercial building is different . . . and the ways in which occupants use any given building are *very different* . . . the only sound basis for making sound financial energy efficiency investment decisions is through monitoring energy usage on key circuits . . . or by completing a hands-on energy assessment.

## 2. Evaluate Energy Efficiency Improvement Options

Evaluating energy efficiency options in Step – 1 planning for R & M, TI and renovation projects minimizes the cost and risks involved in making these investments.



**Warning** - The information required for these evaluations *cannot* be obtained from any website, or directory, or utility company, or statistical model, or portfolio of case studies.

Again, because every commercial building is unique, this information can only be supplied by a local contractor who knows what is, and is not, possible . . . and what the cost and energy cost-savings benefits of each option will be.

With this building-specific information, an owner or manager can quickly evaluate the best energy efficiency option, based on their budget and ROI requirements for any given R & M, TI or renovation project.

It would be difficult to evaluate a range of energy efficiency options without the help of an appropriate software platform.

That is why we developed *EnergyActio*™ software. We will share more about EnergyActio in the next chapter.



### *Note:*

*Check out EnergyActio software (in Chapter 5).*



## CHAPTER 5

# EnergyActio Software

## EnergyActio™

EnergyActio is Internet based software that property managers and contractors use to evaluate and implement energy efficiency improvements through a continuous improvement process.

### How EnergyActio Works

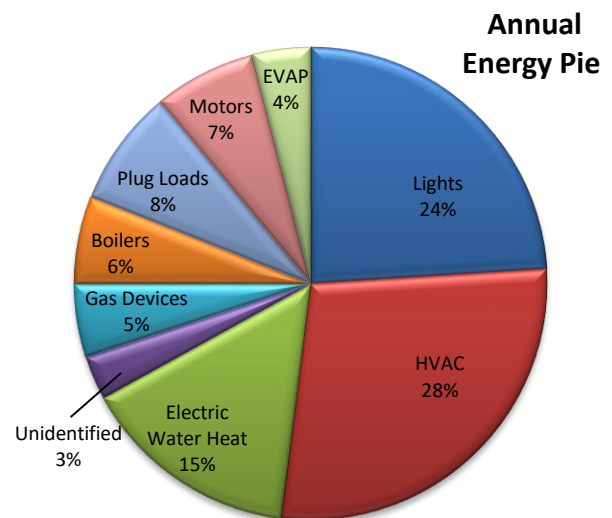
EnergyActio is a 4-step process that supports making energy efficiency investment decisions in Step 1 of the commercial real estate PDCA cycle (discussed in Chapter 4).

#### Step 1 – Investigate Energy Use

In Step 1 of the EnergyActio process, a property manager, engineer or contractor performs a hands-on energy assessment, or gathers information provided by monitoring equipment, to identify how and where the building consumes energy.

EnergyActio summarizes this information in an *Annual Energy Pie*. The Annual Energy Pie illustrates the contribution that each energy consuming system is making to the total energy bill.

This information provides an objective baseline for setting improvement priorities and for comparing the costs and energy cost-savings benefits of alternative options . . . in Step 2.



## Step 2 – Input Solutions

In Step 2, building owners and managers set priorities for energy efficiency investments.

Then, they collaborate with contractors to determine the costs and estimated energy cost-savings benefits for any number of alternative solutions.

EnergyActio can record any number of contractor proposals to make comparing alternative solutions fast and simple.



## Step 3 – Analyze ROI

In Step #3, owners and managers evaluate energy efficiency options as they plan and budget ongoing R & M, TI and renovation projects. EnergyActio selects the best combination of solutions for any given project based on the available budget and ROI objective.

EnergyActio calculates the total cost of selected solutions and the period of time that will be required for return of investment as a result of energy cost savings.

Because budgets and ROI objectives frequently change during a planning process, Step 3 can be quickly and easily repeated to test any number of alternative scenarios.

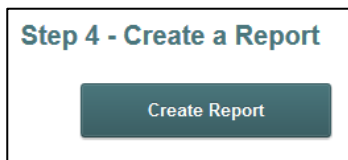


## Step 4 – Create a Report

Most real estate owners prefer to make investment decisions based on a thoughtful, thorough and well-presented recommendation.

With EnergyActio, one mouse click downloads highly professional, fully editable, Word report documents that contain all of the information gathered during the Step 1 -Investigation (including notes made, and photos taken, with an iPad or tablet computer). The document also contains extensive detail of the recommended solution selected in Step 3.

Download a [Sample Report](#).



## EnergyActio Benefits for Owners and Managers

EnergyActio provides owners and managers with a convenient platform for:

- Understanding how their buildings consume and waste energy.
- Evaluating energy efficiency solutions as potential components of repair and maintenance, tenant improvement and renovation projects.
- Managing continuous energy efficiency improvement in R & M, TI and renovation projects.

## EnergyActio Benefits for Contractors

EnergyActio provides contractors with a convenient platform for:

- Showing customers how their building consumes energy.
- Explaining the costs and benefits of different solutions.
- Creating instant proposals and recommendations.
- Becoming a trusted energy efficiency advisor.

## U.S. Department of Energy Listing

EnergyActio software has been included in the U.S. Department of Energy's Energy Efficiency and Renewable Energy Software Guide.

The U.S. Department of Energy [listing](#) describes EnergyActio as:

". . . a simple, inexpensive, software platform that enables facility manager/contractor collaborations to evaluate efficiency solutions based on real, building-specific conditions and real cost and benefit numbers. EnergyActio is an online toolkit for:

- Performing building-specific, hands-on energy assessments
- Capturing real cost and benefit estimates provided by local contractors
- Evaluating the cost and ROI for alternative efficiency solutions
- Preparing one-click, professional reports and recommendations

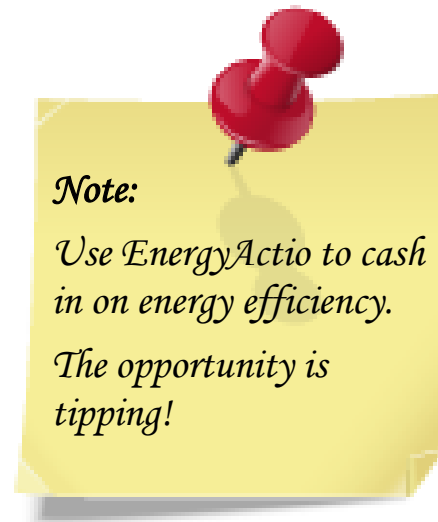
EnergyActio is simple, self-guiding software designed for use by any engineer, contractor or professional facilities manager."

EnergyActio automates Energy Efficiency Continuous Improvement.

## Getting Started

EnergyActio is simple software and individual user subscriptions are available starting at only \$19..

Most property managers and contractors can dive right into their first project at [www.EnergyActio.com](http://www.EnergyActio.com); but individual coaching and team trainings are also available. To learn more about individual coaching and team training contact EnergyActio at *info(\*\*at\*\*)EnergyActio.co*.



## CHAPTER 6

# The Opportunity is Tipping

In his book, *The Tipping Point: How Little Things Can Make a Big Difference*, author Malcolm Gladwell defines a “Tipping Point” as “That magic moment when an idea, trend, or social behavior crosses a threshold, tips, and spreads like wildfire.”

There is a substantial and growing body of evidence that suggests energy efficiency improvement has become a movement and has potential to tip and spread like wild fire.

This potential is the result of seven factors:

1. A tremendous financial opportunity.
2. Availability of high ROI energy efficiency products.
3. Owner realization that improvement need not be capital intensive.
4. Tenant awareness of energy cost reduction opportunities.
5. The impact of mandatory Energy Star scoring on asset value.
6. Availability of a software enabled owner/manager/contractor collaboration platform.
7. Contractors becoming energy efficiency advisors.

In this chapter, we will take a brief look at each of these seven tipping factors.

### 1. Financial Opportunity

The most powerful force driving demand for energy efficiency improvement is the financial opportunity that is available to commercial property owners, tenants and contractors.

- Property owners have a tremendous opportunity to translate \$60.7 billion in energy waste into as much as \$857 billion in capitalized asset value (at a 7% capitalization rate).
- Tenants have a tremendous opportunity to recover a big chunk of \$60.7 billion in wasted expense and transform it into as much as \$60.7 billion in new found profits.
- Contractors have an opportunity to compete for more than \$50 billion of energy efficiency work.



## 2. High ROI Energy Efficiency Products

New and better technologies are making the payback on energy efficiency investments better and better. The following paybacks (in years) are typical:

<u>Technology</u>	<u>ROI (years)</u>
Envelope and mechanical repairs	.1 - 2
Lighting sensors and controls	.3 - 2
HVAC controls	2 - 5
Motor VFDs	2 - 4
Lighting conversions to CFL/LEDs	.5 - 4

## 3. Owner Realization

A primary reason that energy efficiency improvements have not been selling like hot cakes is the *incorrect* (but widespread) belief that improving energy efficiency is, of necessity, capital intensive.

This situation is changing as owners come to realize that improvements can be made economically, through an *Energy Efficiency CI™* process.

Owners and managers are also discovering that the EnergyActio software platform makes it easy to discover and evaluate a wide range of efficiency options for each of their R & M, TI and renovation projects.



## 4. Tenant Awareness

Tenants are increasingly aware that the buildings they occupy waste a great deal of energy. For many, recovering wasted energy expense presents a tremendous opportunity to increase bottom line profits.



## 5. Energy Star Scoring

The requirement to report Energy Star benchmark scores is spreading. As of year-end 2013, the list of Federal, state and local governments either considering or requiring compliance included:

- Chicago, IL
- Denver, CO
- West Chester, PA
- Minneapolis, MN
- New York, NY
- Philadelphia, PA
- San Francisco, CA
- San Joaquin, CA
- Seattle, WA
- The District of Columbia
- The State of Florida
- The State of Hawaii
- The State of Michigan
- The State of Utah
- The State of Washington
- The State of Connecticut
- The State of Delaware
- The State of California
- The State of New York
- The State of Oklahoma
- The State of Ohio



As the list of jurisdictions that require Energy Star scoring and reporting grows, owners of buildings with mediocre or poor scores (which will include 75% of all buildings based on current scoring criteria) will face two problems:

1. As tenants give increasing consideration to Energy Star scores, they may penalize low scoring buildings with lower occupancies and lower lease rates.
2. As buyers consider Energy Star scores during their due diligence process, they may penalize low scoring buildings with lower determinations of asset value.

## 6. Owner/Manager/Contractor Collaboration

The continuous parade of energy product sales representatives and contractors pushing “magic bullet” solutions has been a significant barrier to energy efficiency improvement. Most owners and managers have come appropriately cynical as more than a few have been the victims of over-promise and under delivery.



With the availability of EnergyActio software, owners, managers and contractors are now able to collaborate in exploring a wide range of solutions. And, they can base financial decisions on an objective understanding of how the building in question consumes energy.

## 7. Contractors are Becoming Energy Efficiency Advisors

Several studies indicate that contractors who help owners explore alternative energy efficiency solutions have a substantial advantage in competing for more than \$50 billion of energy efficient R & M, TI and renovation projects.

Contractors are using EnergyActio to deliver greater value as they help owners evaluate energy efficiency options in their ongoing R & M, TI and renovation projects.



## It's Time to Cash In

The convergence of these seven factors is tipping energy efficiency toward that magic moment when it will spread like wildfire. This tipping presents a tremendous financial opportunity to property owners, managers, tenants and contractors who are ready to take action.

### *Note:*

*The elephant has a few suggestions that will help you cash in (in Chapter 7).*



## CHAPTER 7

# Check Lists for Cashing In

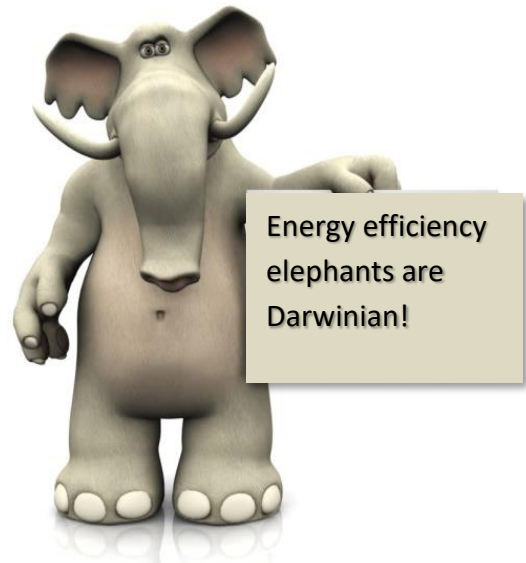
While the “Energy Efficiency Elephant” is only a metaphor, those who want to cash in on energy efficiency need to take heed.

### Beware of Darwinian Creatures

Energy efficiency elephants are Darwinian creatures.

Either you eat them (by making energy efficiency improvements) . . . or they will eat up your business (by gulping down owners’ NOI and asset value, tenants’ business profits and contractors’ long-term customer relationships).

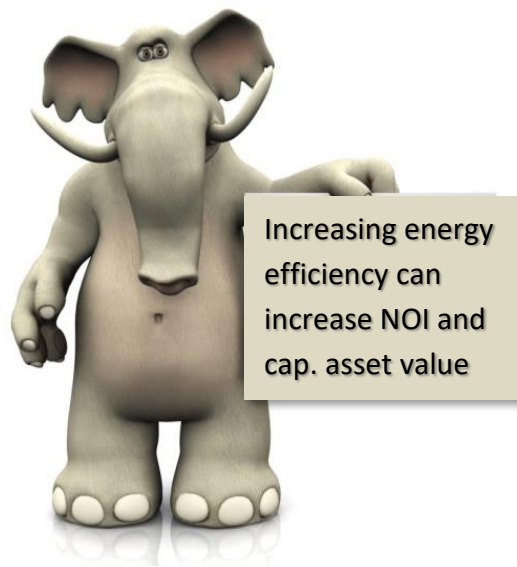
If you are a commercial property owner, manager, tenant, or contractor . . . use the following checklists to start eating your energy efficiency elephants . . .



## Checklist for Owners

The most cost-effective (and least risky) way to recover wasted energy expense is to make energy efficiency improvements one bite at a time . . . through an Energy Efficiency CI process.

If you believe that implementing energy efficiency continuous improvement makes good sense . . . consider doing the following:



### 1. Make a Commitment

- Consider energy cost saving options as a component of every R & M, TI and renovation project.

### 2. Set a Goal

- Set a goal for annual cost savings.
  - Your first goal may be modest . . . perhaps a cost reduction of just 5%.
  - As you assess the results of initial energy efficiency investments, consider setting more aggressive goals based on “lessons learned.”

### 3. Assign Responsibility

- Assign responsibility for understanding how your building uses (and wastes) energy and for evaluating energy efficiency options as a component of ongoing R & M, TI and renovation projects.
- Add a requirement for improving energy efficiency to your property or facility manager’s job description, or management contract.

### 4. Provide the Software

- Provide your manager(s) with a subscription to the [www.EnergyActio.com](http://www.EnergyActio.com) software platform.

## **5. Seek Out Energy Efficient Contractors**

- Ask your contractor(s) to provide an energy assessment; and to help you evaluate energy efficiency options in ongoing R & M, TI and renovation projects.

Require general and specialty trades contractors to provide objective energy efficiency advice in addition to their core services.

## **6. Invite Tenants to the Table**

- Most tenants appreciate an owner's commitment to helping them reduce their energy bills. Demonstrating that commitment, by inviting tenants to the planning table, can produce higher occupancies and lease rates (which will hopefully translate into more NOI and a higher capitalized asset value).

## Checklist for Managers

Helping owners increase net operating income and asset value is a very good way for management companies to win and retain management contracts.

For individual property and facility managers, increasing net operating income and asset value is a very good way to advance your career . . . and make yourself irreplaceable.

For both management companies and individual managers, implementing an Energy Efficiency CI process may be your shortest and most direct path to becoming invaluable.

If you believe that implementing an Energy Efficiency CI process makes good sense . . . consider doing the following:



### 1. Familiarize yourself with the Energy Efficiency CI process

- Read this book, from front to back. Doing that will provide you with a good jumpstart.
- Visit the EnergyActio website. On the home page, click on the *How it Works* link. The *How it Works* page will show you how the EnergyActio software platform supports the Energy Efficiency CI process.
- If you need a little extra help, contact *info(\*\*at\*\*)EnergyActio.com*. We will be pleased to help you get started.

EnergyActio provides individual coaching and corporate Energy Efficiency CI training programs.

### 2. Seek out energy efficient contractors

- Seek out contractors who understand the Energy Efficiency CI process; and are ready, willing and able to help you complete an energy assessment and evaluate energy efficiency options on an ongoing basis.

### 3. Do an energy assessment

- Use EnergyActio's *Step 1 – Investigate Energy Use* feature to self-perform a hands-on energy assessment, or ask an engineer or contractor to perform one for you.

If your building is equipped with energy monitoring equipment, you may be able to use information provided by the system in lieu of a hands-on investigation.

- Used the information produced by the *Step 1 – Investigate Energy Use* feature as the basis for evaluating energy efficiency options in ongoing R & M, TI and renovation projects.

### 4. Recommend Appropriate Energy Efficiency Investments

- As you plan and budget R & M, TI and renovation projects, ask your contractor(s) to estimate the additional cost and annual energy cost savings benefit for a range of alternative energy efficiency investments.

Input those estimates into your EnergyActio Dashboard to advise *Step 3*, your financial comparison of options.

- Use EnergyActio's *Step 3 – Analyze ROI* feature to compare energy efficiency options and to select options that make the good financial sense for each project.
- Use EnergyActio's *Step 4 – Create a Report* feature to prepare a professional recommendation document.

## Checklist for Tenants

If you are considering a new lease, or a lease extension, ask your landlord for a commitment to helping you reduce your energy bills.

When you are ready to ask your landlord for that commitment, consider taking the following actions:



### 1. Ask for Energy Efficiency Information

- Ask your landlord or property manager for the property's Energy Star benchmark score. And, if that score is less than 75, ask them how they intend to improve it.
- Ask for a copy of the most recent energy assessment (which is a prerequisite for initiating any Energy Efficiency CI program).

### 2. Take a Seat at the Planning Table

- Ask for a seat at the planning table to share your observations and concerns related to comfort, safety and energy cost reduction plans.
- Most owners and managers plan and budget R & M, TI and renovation projects on an annual basis. As your manager prepares their annual plan, make sure they consider energy cost reduction options as a component of each project.

### 3. Keep an Eye on Your Energy Bill

- When you negotiate for energy efficiency improvements you are asking your landlord to "Show me the money!" in the form of a smaller energy bill.

Hold your landlord's feet to the cost reduction fire by keeping an eye on your energy bill.

## Checklist for Contractors

In order to cash in on energy efficiency, contractors have to help their customers make good energy efficiency investment decisions.

If you are a contractor who is serious about winning more energy efficient R & M, TI and renovation projects, consider doing the following:



### 1. Offer Energy Assessments

- Whether your staff performs them, or you subcontract, offering owners an energy assessment provides them with the foundation they need for making energy efficiency investment decisions for R & M, TI and renovation projects.

### 2. Provide Objective Advice

- In planning R & M, TI and renovation projects, owners want to consider a range of options. Contractors who provide objective advice have a big advantage for winning those projects.

### 3. Help Owners Evaluate Options

- Owners often struggle to evaluate alternative energy products because they cannot compare the cost and energy cost-savings benefits of numerous options. Contractors who can help owners make those evaluations have a distinct competitive advantage.

### 4. Take Advantage of the EnergyActio Platform

- Provide your customers with an annual EnergyActio subscription for their building.
- Using EnergyActio, perform (or subcontract) an annual energy assessment.

- Based on energy assessment results, help owners evaluate the cost and cost savings benefits of energy efficiency options in each of their ongoing R & M, TI and renovation projects.
- Take advantage of ongoing collaboration on the EnergyActio platform to build long-term customer relationships.

## And Last But Not Least . . . Never Forget

Never forget that energy efficiency elephants are Darwinian. If you fail to eat them (by making energy efficiency improvements) . . . they will eat up your business (by gulping down owners' NOI and asset value, tenants' business profits; and contractors' opportunities to build long-term relationships).

To start eating energy efficiency elephants, one bite at a time, use these checklists. Take EnergyActio for a test drive. Contact EnergyActio to learn more about setting up an Energy Efficiency CI process and EnergyActio training programs.

Carpe diem. Seize the Day!



# About the Authors

Bob Roth, Jim Burpee and the EnergyActio team have been providing energy efficiency advisory services since 2009. During 2012, they developed the *Energy Efficiency CI™* process and the supporting *EnergyActio™* software platform to make eating energy efficiency elephants a simple and reliable process.

Bob and Jim enthusiastically provide Energy Efficiency CI and EnergyActio training for property managers, engineers and contractors. And, they welcome the opportunity to make conference and seminar presentations.



**Robert Roth, Ph.D.**

Bob Roth is co-founder  
and CEO of *EnergyActio™*

Bob Roth is co-developer of the *Energy Efficiency CI™* process and the supporting *EnergyActio™* software platform. He holds BS, MBA and Ph.D. degrees in communications and business management. He also holds certificates and has instructed in business process management for the American Productivity and Quality Center (first administrator of the Malcolm Baldrige National Quality Award).

Prior to founding EnergyActio, Bob was a founder of BGZ, Inc. and Big Green Zero, energy efficiency consultants. Earlier in his career, he developed and marketed commercial real estate, serving as a Vice President for Del Webb Recreational Properties, a Vice President of Radisson Hotels and as National Advertising Director for the Holiday Inns System, Worldwide. Bob was also President and COO of the Grand Canyon Railway restoration project (his doctoral dissertation became the development and business plans).

Bob's academic credential includes a B.S. in public communications (magna cum laude) from Boston University, MBA and Ph.D. degrees (Dean's Award) from California Coast University, and certificates in business process improvement and process benchmarking from the American Productivity and Quality Center.



**Jim Burpee, BSEE, MSME, CEM**

Jim Burpee is President and Chief Engineer of *EnergyActio*™

Jim Burpee is co-developer of the *Energy Efficiency CI*™ process and the supporting *EnergyActio*™ software platform. He holds degrees in both electrical and mechanical engineering. He is also a Certified Energy Manager (CEM) and a licensed building contractor.

Prior to joining BGZ, Inc., Jim owned and operated a remodeling company that specialized in innovating energy conservation technologies into residential renovations. He has also previously served as the Phoenix-based Senior Account Manager for the largest Freightliner truck dealership in the southwest and as a Senior Sales Engineer and team leader for Freightliner Corporation.

In previous responsibilities, Jim served as Product Development Engineer for Tektronix microelectronic component manufacturing. His responsibilities included taking individual product concepts from the design stage to a completely manufactured product. The projects that he shepherded through this process ranged from components used in GSM cell phones to laser guided missile systems.

Jim Burpee's academic credential includes an M.S. in Mechanical Engineering from the University of Portland and a B.S. in Electrical Engineering from Oregon Institute of Technology. He is a Certified Energy Manager (CEM).

# References

The following links reference several of the information sources referred to in this book:

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[See the Study](#)
  
- The Institute for Building Efficiency's ***Green Building Asset Valuation: Trends and Data Research Snapshot - Do Green Buildings Translate to Higher Asset Value?*** (2011)  
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- The Henley Business School, School of Real Estate and Planning, Henley University study ***Green Noise or Green Value? Measuring the Price Effects of Environmental Certification in Commercial Buildings***  
[See the Study](#)
  
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- The McGraw Hill Construction Report ***Business Case for Energy Efficient Building Retrofit and Renovation*** (2010)  
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- The Rockefeller Foundation report ***United States Building Energy Efficiency Retrofits*** (2012)  
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- The Deloitte survey, ***reSources 2012***,  
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[See the Study](#)
- The McKinsey & Co. report ***Energy efficiency: A compelling global resource*** (2010)  
[See the Study](#)
- U.S. Department of Energy - Energy Efficiency and Renewable Energy Software Guide**  
[See the Guide.](#)
- The EnergyActio Website**  
[View the Website](#)