



The Insiders Guide to Cutting Energy Cost

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Introduction

At some recent, yet indiscernible moment in time, the decision to design energy efficient buildings reached a tipping point. Prior to that point, the idea of challenging the status quo was too radical for all but the most intrepid of real estate investors. A high performance building was a bit like modern art; it was interesting to look at, but did not have mass market appeal.

Times have changed. The days of cheap energy are over.

This market shift will undoubtedly change how we do business with one another. For those of us in the commercial real estate industry, it will challenge us to change how we think about, and consume energy. At a minimum, we will certainly learn to pay more attention to it.

While the roster of LEED™ registered projects continues to grow, we wonder what will happen to the remaining 98% of today's buildings that are not energy efficient. Owners have two choices: the choice of inaction, which maintains these buildings at their current efficiency levels, or choose to upgrade them to meet the standards set by high performance building design. The first choice is the least expensive in the short term, but risks putting your portfolio at a competitive disadvantage. The second choice - to upgrade - involves short term financial risk, but will likely yield a higher long-term valuation. The choice is yours.

The most common choice, and the path of least resistance, is to upgrade existing buildings incrementally, spreading the risk and capital out over time.

A quick investigation of the “green” marketplace yields a myriad of options, ranging from novel window glazing compounds to comprehensive building automation systems. It's easy to be swayed by the allure of new technologies. Many are very effective at addressing the symptoms of our energy efficiency problem.

Unfortunately few of the technologies available today address the real source of the problem. To discover what that real problem is, we must first look at how buildings truly function.

The Crux of the Problem

Most commercial buildings of a reasonable size have a dedicated facility management team. This team is usually lead by an experienced building manager - a pragmatic, project-oriented task master with an impossibly long list of things to do. They know which contractors they can trust, which tenants require a little extra attention, and which systems are in need of an overhaul. Buildings would literally cease to function without this person's expertise.

A recently released statistic noted that in an average North American commercial office building, 30% of total operating costs are attributed to energy use¹. This is often the single largest operating expense. But a typical facility manager dedicates little time, in an average week, to reducing energy costs. Why?

Most investors and managers associate reducing energy use with high capital costs, via the replacement of building systems². This association is pretty accurate. Most of the technologies available today that purport to save energy, are very capital intensive.

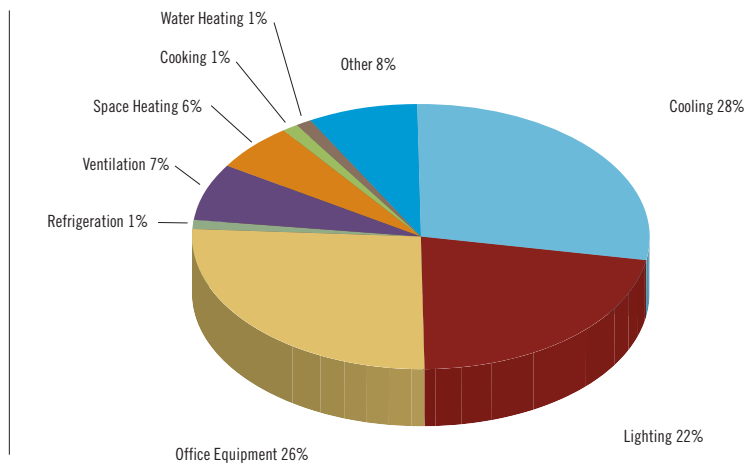
In today's real estate market, increasing cap rates and the threat of weakening valuations make it difficult to justify capital expenditures. Given these conditions, facility managers tend to focus on what they have control over - the efficient function of the building systems in place today. Until capital becomes available, energy costs are treated as a fixed cost.

¹ http://www.energystar.gov/index.cfm?c=comm_real_estate.bus_comm_realestate

² <http://www.greenerbuildings.com/feature/2008/02/27/sustainable-facility-management-next-wave>

Figure 1:

Energy Use in Commercial Office Buildings, by Activity³



As Figure 1 illustrates, the facility manager is correct in assuming that they have limited control over the energy use in a typical multi-tenant office building. In fact, tenants exert control over 75% of energy consumption, through the equipment they choose, their lighting use and preferred temperature settings.

In short, the crux of the energy efficiency problem in our buildings today is that there is little correlation between those that consume energy - the tenants - and those that are responsible for paying for it.

Tenants Pay, Don't They?

The first thought that probably comes to mind is that tenants generally do pay for their energy use. Most leases assign operating costs to tenants on a per-square-foot basis, and any expenses incurred above that threshold are captured in an annual settlement bill. So yes, tenants do pay for their energy costs, in an indirect way.

Energy management isn't a priority with most tenants; they are busy running their own businesses. The financial structure outlined in lease agreements does not provide enough short-term, compelling reasons to make this a high priority task.

Common sense dictates that in order to encourage a specific behavior, we must provide both incentives for preferred actions (carrots) and punishments for less desirable behavior (sticks). Therefore, tenants should receive tangible rewards for energy efficient behavior and meaningful deterrents for over-use. Unfortunately, standard leases don't provide compelling enough carrots or sticks to achieve this. The following analogy outlines why this is the case.

An Analogy

Most of us fill up our cars at the gas station on a pretty regular basis. The cost of gasoline is in constant motion; as consumers we try to "game" the system by filling up when the price drops, and delaying our purchase when the cost per gallon goes up. There are times when we need to fill up regardless of the cost, but in general we will work to avoid higher prices.

³ US Department of Energy, Energy Information Administration, Building End-Use Consumption Survey, 1999.

Figure 2: Flat Rate Fillups



Let's imagine for a moment that instead of paying a variable price per gallon, your local gas station offers to bill you \$100 a month for your gas consumption. There would be an override clause in that contract: if you and your neighbors used more gas than is covered by your collective payments, you will each receive a settlement bill at the end of the year. The proportion of the annual cost overrun would be allocated based on the size of your house, relative to your neighbors.

If this were the case, how would it change your driving and spending habits? When it came time to purchase a car, would you prefer an economical little hybrid that gets 55 mpg, or a fully loaded sports sedan in the same price range that gets 25 mpg? Would you go out of your way to fill up when the cost of a barrel of oil drops, or just fill up whenever it was convenient?

Most people would concede that this would be a foolish way to encourage fuel efficient behavior. With the short-term carrots and sticks eliminated, most consumers would not work to reduce their exposure to higher wholesale prices and do what was easy.

Tenants that pay a set cost for energy as part of their OPEX charges behave in the same manner. There is no immediate and compelling incentive to save.

It's Going to Get Worse

Given that the cost of virtually all generation fuels - oil, natural gas, coal and uranium - have risen dramatically in the past few years, it should be no surprise that electricity costs are heading in the same direction. It's not only the cost that will rise. The complexity of pricing structures will increase as well.

Almost all North American jurisdictions are in the process of implementing a new energy pricing structure, referred to as "smart metering". In addition to recording the amount of energy consumed, smart meters also record the time that consumption takes place.

The primary goal of smart metering is to make the cost of energy consumption variable. Most states are considering pricing structures that vary the cost along a 1:3:9 ratio. Simply put, it will cost 9 times as much to run your air conditioner on a weekday summer afternoon, and 3 times as much in the early evening, as it will to run it on a Sunday night.

To make matters worse, you now must not only encourage tenants to reduce their overall energy use, but also to reduce it at specific times.

Tenants are also getting smarter. Many have realized that they are subsidizing the other office down the hall. An increasing number of companies are developing "green policies" to reduce carbon emissions, but they have no way of tracking their energy use when billed on a per-square-foot basis.

It's time to change the way tenants pay for their energy use.

Individual Tenant Metering

Meters have been around for a long time, but very few have found their way into of multi-tenant commercial buildings.

There are a three good reasons for this. First, energy costs were not an important issue. Second, installing meters (and the electrical re-wiring involved) is expensive. Third, tenants are constantly moving. In an average office building, 35% of the walls move in a given year. Meters just weren't worth the hassle.

The good news is that these hurdles are now easier to overcome. It's becoming increasingly apparent that energy costs are a problem. Your accountant would probably agree that the largest single cost representing 30% of an annual operating budget requires serious attention.

Metering technology has evolved. Compact tenant metering systems can leverage your buildings existing wiring to accurately allocate energy costs. These systems are the size of a clipboard, require no floor space and most importantly, no re-wiring. Because metering sensors can clip into existing electrical panels and report their information automatically, building managers can simply update billing information online when a new tenant space is created.

Increasing energy costs and technological innovation have overcome the primary hurdles to tenant metering.

The Impact

Let's take a look at an actual multi-tenant building that has implemented individual metering. The graph below is captured from Triacta's online meter reading service. Meters were installed in March 2008, and the first bills were sent out on April 4, 2008.

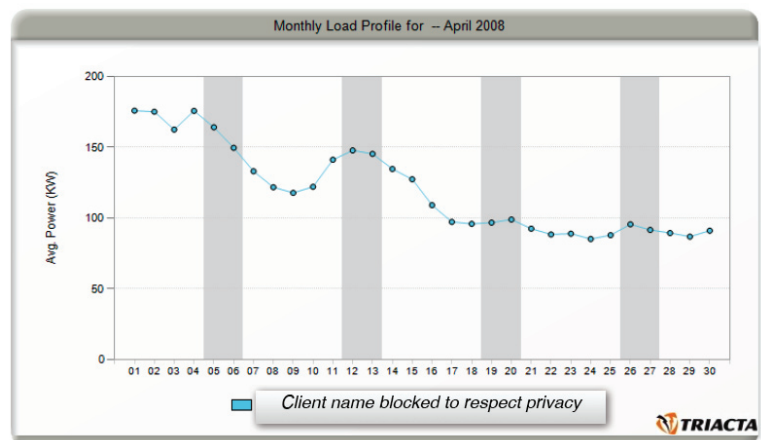
Not only was the reduction in energy use immediate, it is maintained over time. Each bill sent reinforces the importance of energy efficient behavior. The tenants' collective actions have reduced the average peak load from 175kW to under 100kW. Approximately 80% of the tenants benefit from a net decrease in their monthly costs. The remaining tenants pay more, but now have the incentive to save.

Furthermore, this installation occurred at no capital cost to the building owner. Triacta recoups its costs by adding an administration fee on each tenant bill. Therefore, the capital risk associated with tenant metering was reduced to zero.

When tenants pay directly for their energy use, overall building consumption drops on average by 20%. That's an impressive number - comparable to installing an automation system or changing the windows, but at a fraction of the cost. Put another way, for every 5 buildings that are individually metered, an entirely new building can be powered from the savings alone.

This finding is consistent across jurisdictions, climate zones and building types. It's actually a very simple idea; those that control the energy use should also be responsible for managing it.

Figure 3: Energy Demand in a Multi-Tenant Building



Moving Forward

There is no doubt that today's volatile capital markets increases the risk associated with any further investment in real estate assets. Under normal circumstances, this would be a good time to maximize NOI and maintain the status quo in building operations.

It is time to decrease your risk, by reducing your exposure to energy costs. Identify the projects that provide the biggest energy use with the least amount of capital risk, and implement them - quickly.

By putting the responsibility of energy costs in the hands of those that have the power to control it, you will encourage tenants to behave in an efficient manner. It's just common sense. Individual tenant metering can be completed at little to no capital cost, reduce your buildings energy use and increase its long term value.

There are several states that are allowing individual tenant metering for the first time. This is an excellent opportunity to test these assertions for yourself.

If you would like to learn more about how Triacta can work with you to meter your tenants, drop me an email at jen.hassani@triacta.com, or visit us at www.triacta.com. I look forward to hearing from you.



Triacta is a leading developer and manufacturer of smart meters. We make it easy for facility managers, energy service companies and local distributors to individually bill residential and commercial tenants for electricity consumed. And, we enable businesses in a variety of sectors to better manage their electricity costs and consumption by providing meaningful and timely information not available from electricity suppliers.

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