

# How energy saving projects provide benefits to companies and organizations



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**WHITEPAPER for  
building owners  
and managers  
Spring 2016**

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## Executive Summary

Energy-saving projects are increasingly common in companies and organizations, but they have not yet reached their true potential. It is estimated that there is a potential for hundreds of billions of dollars in energy savings in the coming years in North America. Although many companies and organizations spend money each year on energy-saving projects, there are still much unrealized opportunities to be captured.

The following white paper highlights the benefits that energy-saving measures and projects could provide for companies and organizations. It also addresses the risks, both real and perceived, of implementing energy saving projects, as well as a number of concerns that many building owners and managers raise during the process of working towards reducing their energy consumption. When done properly, the potential benefits of implementing energy-saving projects vastly outweighs the downsides. Energy savings can bring real savings to companies that take the time to properly plan and implement energy-saving measures.

## Concluding Summary

Energy-saving projects can provide substantial “recurring” savings. Virtually every building is a candidate for finding and implementing energy-saving measures, regardless of its type, age, and size. The process of generating energy savings can be broken down into a process where you could mitigate the risks.

## Introduction

Much has changed since companies started to do energy-saving projects a few decades ago. Energy prices for all sources of energy have increased dramatically, putting additional pressure on energy consumers to find ways of reducing their cost. In addition to this, as the world is getting more competitive, companies are not only finding they need to compete with local companies, but must also face stiff new competition from countries with much lower costs. This has forced companies to seek cost reductions in all areas, taking a more detailed look at all expenses to see how reducing some of them can improve their bottom line. It comes as no surprise that energy costs are now in the spotlight, and companies are having a closer look at how they use energy and what they can do to reduce their energy consumption.

The rise of new technologies has provided building owners and managers with tools to monitor and control energy consumption. In addition, companies are constantly introducing new equipment that is more energy efficient. While this has provided building owners and managers potential for saving energy, it also introduced a new level of complexity, making it far more challenging, and intimidating, to make decisions on where to focus next. Because of the lack of information, many companies have avoided energy-saving projects.

There is an untapped potential for companies to save hundreds of billions of dollars in energy in the coming years for the United States alone. While the potential savings are real, so is the perceived complexity of knowing what to do, how to implement it, and how to track the benefits.

## Benefits from a Cost Reduction Perspective

While there are many benefits in implementing energy-saving measures, the focus might change from time-to-time depending on a number of external and internal factors. For example, in more economically challenging periods, companies retain their working capital, making it difficult to acquire working capital for energy saving projects with longer payback or for reducing carbon emissions. Companies might put these projects on hold. However, in the long term, companies who pursue a sustained effort, manage to reduce their energy consumption, gain an advantage over their competition if only because they became more efficient. The following are some of the benefits in implementing energy-saving measures.

## Reduced Energy Cost.

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This might be the most obvious of the benefits. As companies implement measures or projects to reduce their energy consumption, they reduce their overall utility costs, bringing a direct benefit to their bottom line.

The amount of energy reduction a building owner or manager might achieve depends on the building's situation, such as what purpose it serves, its location, its characteristics (size, shape, age, quality, etc.), and also what energy-saving measures the company has previously implemented.

Through energy-saving measures, there are a substantial number of items that could influence a building's opportunity to have its energy consumption reduced, as illustrated above. Therefore, grouping all buildings together is impossible. Every building is different and its potential to save energy is different.

## Ranges of Savings

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Based on previous energy-saving measures that companies have done, it is possible to provide ranges of potential energy-savings. This will help guide the user into determining what amount of energy they could reasonably save when implementing energy-saving measures.

For typical office, or commercial buildings larger than 10,000 square feet, it is often possible to reduce the energy costs between 5 and 10% simply by implementing operational changes. These are changes that require either very little or no capital expenditure. If we include energy-saving measures and projects that involve capital investment, it is often possible to increase the energy-savings by an additional 10 to 20%, bringing the total energy saving anywhere from 15 to 30%.

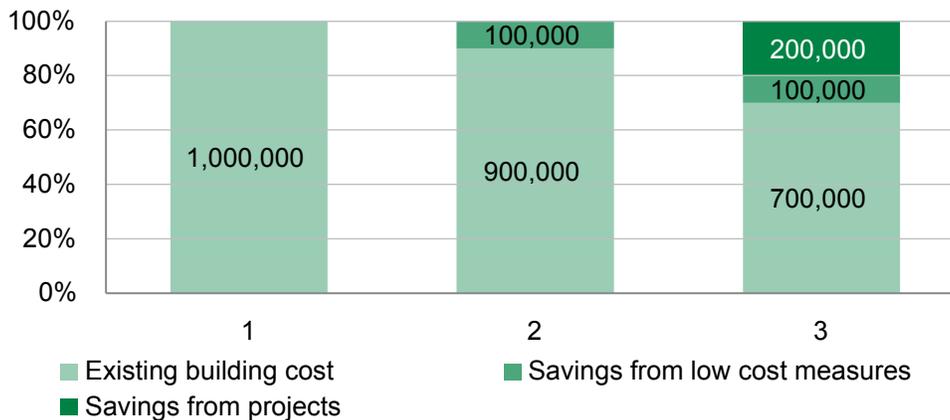
The numbers above are rough estimates that do not take into consideration any energy reduction measures that a building might have recently undergone, which would contribute to reduce the potential percentages in energy reduction indicated here. These numbers; however, give an indication of which buildings are eligible for energy-saving measures that companies have not yet implemented. Companies should use these numbers as rules of thumb in order to highlight quickly the potential savings for a company.

For example, an office building with an energy cost of \$1 million dollars per year might save between \$50,000 and \$100,000 in energy a year through minor energy-savings projects that require little or no capital expenditure. This might not apply for a new building that was equipped with the latest energy management systems, but would probably apply to a 15-year old building with older (or no) systems in place.

With some capital investment to retrofit some components, the office building in the previous example above could potentially achieve an additional

\$100,000 to \$200,000 per year in savings. The potential savings from the low cost measures as well as from the projects that require investment are shown in the chart below. These potential savings are not only substantial, but have the possibility to become recurring year-after-year, so that the total saving a building could achieve over a number of years could be very significant.

### Potential energy savings



### Maintenance Cost Reduction.

When implementing energy-saving measures, companies, and organizations also look at the maintenance of the building systems, and work towards operating them in the most optimal way possible. This generally tends to reduce the overall cost of maintenance, as systems break down less often and operational problems are more susceptible. Companies try to catch these in time before they become costly. When looking for energy saving measures, it is possible to find opportunities that not only reduce the energy consumption of some equipment and systems, but also make them easier to maintain, reducing maintenance time and reducing maintenance costs at the same time.

### Reduced Downtime.

This benefit operates in tandem with the maintenance cost reduction listed above. If a company maintains the systems well, they are less prone to break and cause downtime in the building's operation. Furthermore, when building equipment needs replacing, it is often possible to use the opportunity to do additionally an energy-saving project by replacing the equipment with a more energy efficient one. This avoids downtime for the building's operation.

For manufacturing buildings, companies might sometimes do the energy-saving project during planned maintenance sessions. Overall, this process can help reduce unplanned downtime. While the elements listed above bring a monetary benefit, often directly improving the bottom line of the company or organization, there are additional benefits in conducting energy-saving measures, which are qualitative, but you might still consider them important.

## Benefits from an Added Value Perspective

### Increased Comfort.

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In doing energy-saving measures, companies also address the operations of the building systems. They might also utilize “commissioning” to insure that the systems are working at their optimal level. This often results, due to the design, in providing increased level of comfort to the building occupants. This increase in comfort could have a beneficial influence on the productivity of the people working inside of the building.

### Increase in Building Value.

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While some companies might not see the direct monetary benefit from the overall increase in building value that energy saving measures can bring, only when you sell the building does the benefit often crystalize. The benefit here is evident. If we take two similar buildings, and one of them cost ten percent less in energy to operate, there is a good chance that this building would be worth more on the market. If the purchasers are buying the building for t/heir operations, they can easily calculate the benefit the energy reduction will have on their operations and factor this on the purchase price. If the purchasers are buying the building to lease it to tenants, the building will be more attractive to potential tenants.

### Property More Marketable for Tenants.

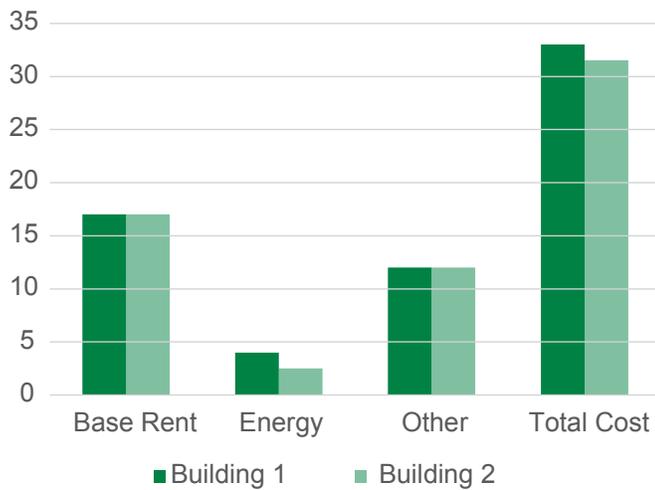
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Regardless of the way a lease is structured, someone ends up paying for the building’s energy. It could be tenants, the landlord, or a mix of both. However, in all cases, a building with a lower cost of energy, all other things being equal, will be more attractive to tenants. There is an argument that says where the tenants pay either directly or by way of recharge from the owner/landlord, that doing energy saving projects does not benefit the building owner.

What this argument does not take into consideration is the fact that tenants, like any other company, works with limited budgets, and the cost of energy is an influential factor. For example, if a building owner leases his building on a triple net lease, this means that the owner will re-charge to the tenants all expenses, often adding to the expense some kind of administration fee for the management of the building. The tenants pay the rent as a combination of base rent and additional expenses.

For the tenants, they pay a total amount (base rent plus other expenses) and they will compare that total amount paid (usually on a per square foot basis) to other spaces on the market, to make their selection. If a building owner has lower energy expenses than his competition, the owner of that building can attract more tenants. He could also price himself on the same level as his competition by having a higher base rent and lower additional expenses. Since the base rent goes directly in the pockets of the building owner, the lower the other expenses (including energy expenses), the more he could technically charge for base rent.

### Tenant Cost



The chart left illustrates the costs that a tenant pays for space leased in two separate buildings. All things considered equal, if a building has a lower cost of energy the total cost for the tenant will be lower as well, making the more energy efficient building more attractive for tenants.

**Many building owners have, in their leases, the possibility to charge back to them energy saving projects, provided they are amortized over a number of years.** For example, a building owner that would like to replace an equipment with a more energy-efficient one that comes with a payback of two years could do the project and charge back to the tenants their share of the project. Many buildings owners might re-charge the total cost of the energy-saving project (as well as reasonable interest) for the time the tenants are paying off the project. The tenants on the other hand see an immediate reduction in energy expense, which, if planned properly by the building owner, could more than offset the cost of the project. In fact, the energy-saving project could produce positive cash flow for the tenant until the project is fully paid and then continue to produce an increasingly positive cash flow afterwards.



### Project cost and energy savings



In the chart above, we have a project with a cost of \$100,000 that will save the building and the tenants \$60,000 per year. A simple payback of 100,000 divided by 60,000 equals 1.67 years. The building owner decides to pay for the project and re-charge the tenants over a three (3) year period with a reasonable interest rate of five percent for the financing of the project. The cost per year to the tenants is therefore \$35,965. The net result for the tenants is a benefit of just over \$24,000 and is calculated by taking the annual energy savings of \$60,000 and subtracting the annual cost of the project including the financing interests (\$60,000 - \$35,965 = \$24,035). The tenants have a positive benefit of over \$24,000 on the very first year.



*How energy saving projects provide benefits to companies and organizations*

### Project cost and energy savings



However, after the third year, since the tenant has fully re-paid the project capital, starting on the fourth year (as shown in the chart above), the annual energy savings benefit the tenants without the need to pay for the project. The total benefit (net result) for the tenants is then equal to the \$60,000 of annual energy savings.

## Environmental Benefits

The environmental component is an important one. However, it is often not the main reason for conducting energy-saving measures since companies do not really see a direct and immediate benefit for them. Still, reducing energy consumption does mean less pollution, less carbon emissions and less demand on the energy utilities companies to produce energy in the first place.

- ➔ **Carbon Footprint.** The carbon footprint is a measure of how much greenhouse gas emissions an item emits. In the case of a building, we often know this as the sum of the carbon footprint inclusive of all of its systems. Reducing a building’s energy consumption generally reduces by a proportional factor the carbon footprint and provides an environmental benefit.
- ➔ **Water Reduction.** Water used for buildings is treated water, generally suitable for consumption. A number of building systems use water either for cooling or for cleaning. Some equipment such as open-

air cooling tower evaporate large amounts of treated water in their daily operations. Other systems simply use the cold temperature of the water to cool the systems down. When energy saving measures reduce water consumption, there is a benefit to the environment as it means less water is wasted and there is less water to treat and to transport.

## Elements of Risk and Mitigation

At the introduction of this document, we mentioned that there is still an enormous untapped potential for energy-saving projects. With all the benefits associated in doing such projects, one might speculate that management would approve all potential projects and complete them rapidly. However, some companies and organizations still approach the energy-saving sphere with caution because of some of the elements of risk, regardless of if they are real or perceived.

## Perceived Risks of Doing Energy Saving Projects

The following lists some of the concerns and perceived risks that companies might have towards energy-saving projects.

### Risk of Attaining Savings, but Not Doing the Proper Things.

This is probably the most important perceived (and often real) risk. If a company completes an energy-saving measure and does not reach the projected saving, then the measure will not meet the anticipated results. For example, if the objective of the project/measure was to have a two-year (simple) payback, (meaning that the savings generated by the energy saving measure should be able to pay for the cost of the project within two years) and the real savings are only half of what the savings were estimated, the project now has a four years payback and the company would obviously not consider this a success.

This failure could dampen all future initiatives for other energy-saving measures. For a program of energy saving measures to be a success, estimating the results and tracking them are crucial. One problem is that because energy-saving projects often require extensive engineering calculations, most companies must rely on external consultants for all estimations and recommendations. The companies must also hope that

Energy saving measures and projects provide a return on investment over a period of time. It is important to be able to mitigate the risk elements in order for the projects to be compliant with the goals that were initially set.

the consultants remain neutral and propose measures that are beneficial to the company, not to the consultants themselves.

Unfortunately, because many of the hired consultants seek to propose measures, which the company will hire them to implement, many of them bias their recommendations. They tend to propose measures that they feel more comfortable with (and which are often more profitable for them), which are not necessarily the same measures that would benefit the building of the client. Too many consultants have become specialists in recommending one type of energy-saving measure using a one-size-fits-all principle.

**A solution, which might be great for one building, might not be great for another.** This forces many building owners to rely on a multitude of consultants to get a good overall picture and leaving them with the task to understand, sort out and try to select which one of the energy saving measure is the best out of all the proposed recommendations.

However, when estimated properly with no biased point of view, energy saving measures actually come with very low risk simply because with the proper tools it is possible to estimate the costs and benefits of the energy-saving measures with a good level of precision.

## **Energy Saving Companies (ESCOs).**

Some of the energy consultants have migrated towards providing both energy savings solutions as turnkey projects as well as guaranteeing the estimated savings, or at least a portion of them. These companies offer what we know as performance contracts. At first glance, this seems like an interesting proposal for the building owner because it provides the insurance that the company meets the energy-savings stipulated in the contract with the ESCO or else the ESCO will cut a check for the missing savings.

In some cases, ESCOs do have their merit because of the turnkey solutions they can deliver, especially if an energy-saving project consists of a large retrofit with numerous components. However, when guaranteeing the savings, the ESCO is really offering the equivalent of an insurance policy, which comes at a cost. This cost (premium), is simply added to the cost of the project one way or another and can represent anywhere from 15 percent to 60 percent of the project's base cost, with the average premium lying somewhere in the middle of these numbers.

### Using an Esco for a project.

If a project cost \$100,000 to do and comes with a simple payback of 2 years (thus generating \$50,000 of annual energy savings), for the Esco company to guarantee the project, they could easily be adding a 25 percent to the cost of the project, bringing it to \$125,000. The payback would now be  $125,000/50,000 = 2.5$  years. The main problem is that the Escos will often avoid telling the building owners what is the premium put on the cost, they will simply mention that the cost of the project with the energy saving guaranteed is \$125,000. Worse, many escos will start by asking the building owner what is the maximum accepted payback and aim for that number so in the example above, if the building owner answers that a 3 year payback is acceptable, the price of the project might suddenly increase to \$150,000.

### Isolate the Premium Cost from the Project Price

One method for the building owner to determine what the premium might be is to tell the ESCO that there is no need for guaranteed energy savings. The ESCO will then provide a price without the premium. To know the cost of the premium the building owner can later ask the ESCO what would the cost of the project be with guaranteed energy saving.

It is desirable to see the project price without the guaranteed savings clause first, because if the building owner obtains a project price with the premium built-in from the start, ESCO will give only a partial credit to the building owner if the building owner refuses the guaranteed savings. It actually functions similar to construction and renovation where the contractors charge higher premiums for extra small work, but only gives a portion of the credit back should the client choose to remove something from the project.

**One of the primary concerns is that the building's owners and managers often either lack the tools to validate the ESCO's numbers (in order to find out the real project are cost).**

However, regardless of this, ESCOs do have their value. They normally have the resources to estimate the savings and do the energy-saving projects. Owners simply need to find ways to validate the ESCO's numbers themselves and to put the ESCOs in competition with each other before blindly signing on the first proposition received.

## **Risk of Over Cost (Project, Consultants and Installation).**

As with any other type of project, energy-saving projects/measures might incur costs that run over budget. One important element is to define well the project and hire competent companies/consultants to do the project. Some energy-saving measures only require some changes in operations or habit, and no other cost than labor is required.

For example, a building operations schedules change for which there is nothing to purchase, simply some time required by the building operations. Other measures can require a minimal investment. This is for example the purchase and installation of a switch that would automatically turn off a piece of equipment if another equipment tied to it is not operating. This often reduces the risk of running over budget. Normally, the cost for these measures is often in the hundreds of dollars. However, for larger measures, such as retrofit projects, companies might examine, in detail, the capital investment, and the project so that the originator can meet the defined budget.

## **Risk of Energy Pricing (Going Down).**

The risk of attaining the objectives of an energy-saving measure or project falls back on two components. The first one we described prior, which is the risk of not meeting the estimated savings. However, even if the project meets the energy-savings requirements, there might still be a risk that the project will not bring the estimated payback due to the price of energy. In the case where energy prices actually diminish, it is possible that a project will not perfectly meet its payback.

Following this logic, if the price of energy becomes free, the payback would be unlimited (it would take an unlimited number of years for the project to repay itself on the energy savings). In reality, this is obviously not the case and rare are the instances where the price of energy goes down over the long-term. Often the opposite happens, which has the effect to create an added benefit for the energy-saving measure by improving (shortening) the payback period. However, in the rare cases where a reduction in energy prices happens for a short period, companies might mitigate this risk by estimating the potential energy price reduction in order to present a more realistic project payback. If the company anticipates that the price of energy will go up again afterwards the company might consider this in the payback calculation.

## Opportunity Risk.

The risk of loss of opportunity is another type of risk. In this case, it is the risk of not getting an interesting energy-saving measure or project approved simply because the project originators did not properly sell it internally (to upper management). For example, if the building owner's company policy is to accept projects with payback lower than three years, a stakeholder may package a project that has a chance to meet these criteria wrongly to show a payback that would disqualify the project.

In all energy-saving calculations, there is a percentage on uncertainty, which is perfectly normal. The calculations must consider weather changes, building operations, and schedules among the factors. **To consider this when estimating the energy savings, many external consultants, or ESCOs, will estimate the saving to be lower than what they anticipate will happen in real life.** The difference is their security factor. While this conservative approach is good, in some cases, providing for too much security factor can also show a payback longer than what it should be in reality, and a company might put some good projects on the side because of this. It is important for building owners and managers to know the real numbers and to be able to draw their own conclusions; not blindly rely on external consultants.

## Comparing energy saving measures to other types of investment a company can make

Do energy-saving measures make for a better investment than other types of investments? This depends on the other investment options that we are comparing the energy-saving investment. There are some arguments leaning towards the energy project investment because their outcome are relatively easy to estimate and to track. For example, if the energy-saving measure is to replace an equipment with a more efficient one (whether it be for lighting or cooling), once the company executes the measure, if operated properly the new equipment will provide the estimated savings.

Comparing this to other investment projects, such as purchasing a new equipment for the acquisition of a new potential client for example, one can see that although there might be more benefits for the company (by creat-

New energy efficient products constantly come to the market which provides for ongoing new opportunities for energy reduction. Combined with the factor of degradation of energy saving over time and virtually every building is a potential candidate for energy saving.

ing more revenues). There are also more elements of risks associated with the new equipment purchase since not all elements of the investment are under the direct control of the company. New clients might not materialize, they might default on their payments, or the new equipment might not perform as planned. In the field of building operations, most equipment have years of proving results and perform according to estimations.

## Are there buildings where we cannot find any energy savings?

This question is popular from Building owners and managers. The first example that often comes to mind is the one of a building which recently had an audit from external consultants done, which in turn provided a list of energy-saving measures that were implemented shortly afterwards. The common argument for this example here is that since the building underwent a retrofit project, there must not be any energy-saving potential left. Fortunately, for the building owners and managers, this is rarely the case and most buildings still have enormous potential for energy-savings. The reason is that very few buildings have had detailed audits and of those, which underwent such an audit, few buildings have implemented every measure proposed. Furthermore, as manufacturers are constantly producing new types of energy-efficient products and equipment, there are constantly new sources of potential energy-saving opportunities arriving in the market each year, regardless of the age or present state of a building.

### Degradation of Energy Savings Over Time

One element that probably does not receive sufficient attention is the concept of degradation of energy-savings over time. Regardless of the type of building or the energy saving project that it underwent, as systems get older and operate with less efficiency over time, the savings generated from past efforts reduce over time. In addition, some building systems do not receive the same level of maintenance. For other systems, a company may not operate them as efficiently as they are supposed to operate, which can cause a reduction in overall building efficiency.



In addition, over the years, most buildings undergo renovation, the company builds or remove new partition walls and does not calibrate the systems properly; making additional contributing factors to degrade the overall energy-savings.

Because of this, virtually every building might be a candidate for implementing an energy-saving measure, providing building owners and managers with constant supply of potential ways to reduce their energy costs and improve their company's bottom line.

## Steps (what you can do)

### Define objectives

#### Internal or external?

You need to decide what you would like to accomplish internally, and what you might want to outsource. You might consider estimating energy saving measures internally. This gives you a clear picture of your needs and then allows for a tender process from engineers and contractors to design and then realize the project. **However, there is also the possibility to outsource everything, from finding the potential energy-saving measures to implementing them.**

Many companies prefer to opt for something between these two possibilities. They might try to internally complete as much as possible and then seek external help when needed. It is important to remember that the more work you outsource, the less control you are able to retain, and you might accumulate the less knowledge in regards to what you are paying for in terms of energy. You might think you are getting a great deal by outsourcing everything but with no internal validation is it hard to really know for sure what you are getting for your money, or if the proposed ideas are really the best one for your building.

**If you are forced to outsource everything, it often pays to have one company come in to do the building audits and find the energy-saving measures, and maybe estimate them (the potential savings), and then to have another company or consultant come and provide an estimate of the cost of the measures.** This often works better than relying on a single company to find the energy-saving measures, estimate the costs, and then price out the project for you. The worse situation is to rely solely on the proposal of a single manufacturer of equipment without doing your own validation (either internally or with the help of a neutral consultant). Many manufacturers will promote their products as the best solution, doing your own homework to validate this is always good to do. As with many other things, the more you can do internally, the more you can potentially save money.

## Search for savings, leaving no stone unturned

When searching for saving, be sure to look for simple operations changes, such as a schedule modification. Some consultants prefer to find solutions that require retrofits, because this is where they make their money when they get the mandate to realize the project. However, as a building owner or manager, you can also find energy-savings ranging from changing schedules of operation, to installing small components that stop equipment when others are not operating.

Many of these measures require very little or no capital expenditure, and while they might not be noticed as much as the replacement of a group of rooftops, they can nonetheless provide energy savings with great pay-back. Some savings might even be as simple as reviewing your utility bills. At times, there could be errors in your billing, which could result in savings simply by correcting this.

Be careful to review the energy used. **In some regions, companies might subscribe to a minimum level of demand (for example the monthly subscribed demand for electricity) and this level will change from time to time.** If your building has seen an increase or a reduction of energy consumption (from installation or removal of equipment, increase or reduction in tenants or level of operations or even a building expansion) it may be good to go back and review the minimum level you subscribe from your utility provider. A simple review of this, followed by an adjustment of your subscribed level, could bring in additional savings. With proper knowledge, companies could do this internally and review it on a periodic basis. Some consultants also specialize in this field and can come and provide assistance for a fee.

## Categorize savings according to investment policies

Once you have found the potential energy-saving measures, you can start to list them and analyze them to see which ones you want to implement. Depending on your company's internal policies, some measures might need a complete business case while others might not be possible to do. Others you might be able to implement immediately (especially those with little or no cost). A good example of this is that if you find that your compressed air network has 50% leakage (which is far from uncommon for older systems). You might decide to repair the air leaks since companies can often do this measure internally. Once this measure is completed, your demand for compressed air might be reduced to the point

where you no longer need all the compressors you were using. You could also decide to consider a second measure like replacing the compressors with more energy efficient ones (once your air leaks are repaired).

## **Plan your energy saving measures/ projects and implement the measures**

Once you categorize your energy-saving measures or projects, decide what you want to do and receive approval for the projects, it is time to plan for the implementation of the measures. There are plethora of companies (contractors) that can realize your projects. Tendering them is generally not a problem. It is important to keep an eye on the result.

## **Track results, progress.**

Tracking your results is an important step because it allows you to see if your savings are in-line with the estimations. Depending on the nature of your energy-saving measure/project, or a combination of both, getting the maximum level of savings might take some time. Especially if the company installs new equipment, operators might need time to operate them at optimum efficiency.

Tracking your results means following the building's energy consumption after your project is completed and comparing the new level of consumption to the level of consumption prior to when you started your project. Ideally, you should see a decrease in energy consumption, which should closely mirror the estimated savings. Industry guidelines consider it optimal to create a chart and establish a baseline for energy consumption to implement an energy-saving measure. This might help you measure the real energy savings realized after each measure. With the proper software tools, you could track numerous projects and produce reports to show your progress.

## **Benchmark**

The task of conducting benchmarking has been widely used during the past decade. Companies utilize this often enough that they get lost in searching for what, or to whom, they should actually benchmark their buildings. Only a few benchmarks are really worth the effort.

## 1. Benchmarking among a group of similar buildings in a same Company/organization

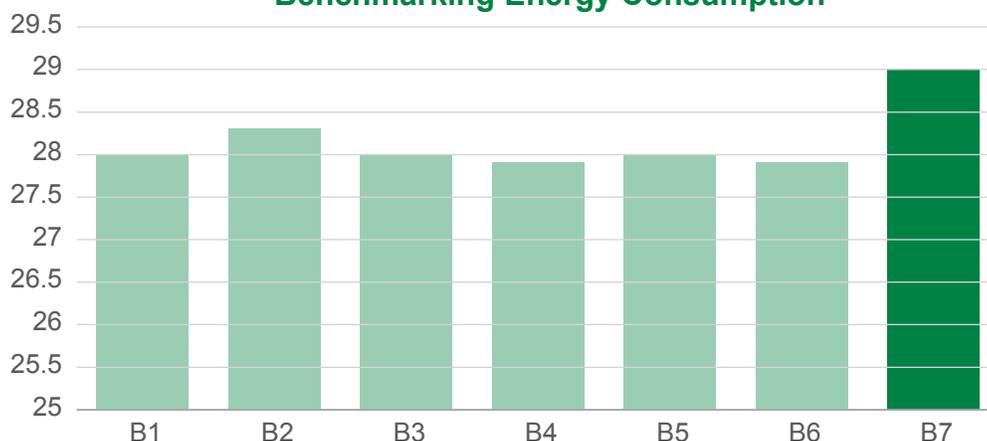
Because operating procedure for similar types of buildings tends to be uniform across different buildings within a same company, comparing such properties together is often a good way to highlight the buildings doing well and those lagging behind, in terms of energy efficiency. Depending on the nature of the company and the geographic locations of the buildings, the company might not be able to do such comparisons since energy consumption could vary significantly depending on where the buildings are located. For example, if a company has office buildings in North America, Europe, and Asia, it might be impossible to compare them all together because the environment that each building operates, as well as its cost of energy, may vary significantly

## 2. Benchmarking among similar types of buildings in a market or industry.

For example, an owner of an office tower could compare his building to similar office towers in the same country to see where his building stands.

Comparing similar types of buildings together on a common basis can help identify the most efficient buildings as well as the buildings that could be targets potential improvement. A practical common basis to use for comparing buildings is the KWh-Eq per unit of surface such as square foot. The KWh-Eq/ft<sup>2</sup> (Kilo watt-hours Equivalent per square foot) presents all sources of energy used in the building in terms of Kilowatt-Hours per square foot. That way energy sources such as natural gas are converted into KWh-Eq and can be added to sources such as electricity.

**Benchmarking Energy Consumption**



## Continuing improvement

The process of continued improvement is an important one and requires the building owners and managers to have the necessary tools in order to measure properly the progress each month to find new opportunities of energy savings. There is a folk saying that states how it is not possible to improve what is not measured. Therefore, continuously measuring your progress and comparing your building to others in the company (when possible), as well as to industry standards, will help provide insight.

## Conclusion

Energy saving measures and projects, when planned well, come with small risks that you can normally mitigate. They also could offer numerous recurring benefits, such as saving money every year. Virtually every building is a potential candidate for saving energy, and companies and organizations should take advantage of the energy-savings potential in their buildings.

Using a mix of proper tools, internal and external resources, companies can help establish and implement, with relative ease, energy saving programs that will bring years of benefits to their bottom line.

## About Almiranta

Almiranta Corporation markets an online (SaaS) business productivity suite of software under the name ExPlan Suite, which helps companies plan capital expenditures, manage real estate leases, and reduce their energy consumption. Almiranta Corporation's energy saving software program, EnExPlan stands for Energy Expert Planning and is a complete do-it-yourself energy software that is affordable, intuitive, easy to use, and allows both technical as well as non-technical people to find, help implement, and track their energy savings without the need for specialized engineering firms or consultants.

EnExPlan gives the user the same knowledge that energy consultants have in order to do energy calculations to perform simulations. This enabled the user to come up with the best recommendation for any building.

See the full product features at <http://www.almiranta.com/enexplain.html>

For more information contact us at [info@almiranta.com](mailto:info@almiranta.com) or visit our site at <http://www.almiranta.com>

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