

# Energy, Cap-and-Trade, and Your Bottom Line

a Special Report by Facilities Performance Services

Cap-and-Trade. I'm pretty sure everyone has heard of it. What is it? What is it designed to do? How is it supposed to work? And finally, how can it affect your bottom line? I hope this report answers these and other questions you may have. We'll start with the basic issues by looking at some problems.

1. Energy has to come from somewhere. Energy resources are used for generating electricity, for transportation, for manufacturing, and for heating. Renewable energy sources (biomass, hydropower, geothermal, wind, and solar) provide for only 6.1% of US energy consumption. Nonrenewable resources (fossil fuels and nuclear power) provide for the remaining energy consumption, and within this group, fossil fuels provide for 85%.<sup>1</sup>
2. There are limited natural resources. At 2003 consumption levels, there are 44.6 years of oil and 66.2 years of natural gas supply remaining.<sup>2</sup> The growth in oil consumption, in part due to new economies in China and southeast Asia, has taken up much of OPEC's spare production capacity.<sup>3</sup> Over 68% of the world's oil producing countries show declines.<sup>4</sup>
3. Location, location, location: A breakdown of proven world oil reserves shows the Middle East with 65%, South and Central America with 10%, Africa with 7%, the U.S. and former Soviet Union with 6% each, Asia Pacific with 4%, and Europe with 2%.<sup>5</sup> The World Coal Institute reports that there is enough coal to last over 155 years. A breakdown shows the U.S. with 27%, Russia with 17%, China with 13%, and India with 10% of the world's recoverable reserves.<sup>6</sup> The top producers of natural gas, the cleanest burning fossil fuel (proven reserves) are Middle East with over 40%, the former Soviet Union with over 30%, 27.5%, the U.S. with 3.1%, Africa with around 6%, the U.S. and Canada with 4%.<sup>7</sup>
4. The process of generating electricity is wasteful because generating electricity is only about about 33% efficient. This means that almost 67% of the energy contained in the natural resource is wasted, yet 100% of its heat and waste gas byproducts enter the environment.
5. Michigan is facing what may experts call an energy crisis. Every energy expert who has provided information to the Michigan Legislature agrees. Energy Prices are going to go up. Why is this? In 2006, the Michigan Public Service Commission stated that:
  - By 2009, growing demand will require that certain measures be undertaken to ensure that Michigan's electric grid keeps the power flowing.
  - By 2009, growing demand will cause electric generation and transmission capacity in the Lower Peninsula to be insufficient to maintain reliability standards.
  - Demand growth, coupled with the retirement of some of Michigan's base load power plants, will necessitate the addition of 1 or 2 new base load power plants by 2014.

Some estimates expect the rise in utility costs to be between 25 and 40%.

What can you do about it? Clearly, you need to take action to avoid the impact of higher energy costs. But there are only three (3) choices:

1. Do nothing and hope for the best.
2. Move (if you can) to somewhere where utility rates, at least for now, are cheaper.
3. Take action to reduce the amount of energy you consume. Using less energy = paying less.

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1 Department of Energy, [www.doe.gov](http://www.doe.gov).

2 Society of Petroleum Engineers

3 Australian Association for the Study of Peak Oil and Gas, "Submission to the Senate Inquiry into Australia's future oil supply and alternative transport fuels by Dr Sheridan Mayo, Deputy Convenor, ASPO-Australia"

4 Energy Information Administration, *World Energy Outlook 2004*

5 BP statistical review of world energy, 06/2002

6 Energy Information Administration, *World Energy Outlook 2006*.

7 Ibid.

What else is going on? You'll remember that all of the waste byproducts and heat from electric generation processes go into the environment. This leads to the theory of Global Warming; the belief that man-made pollutants in the atmosphere act as a sort of "greenhouse effect", causing heat to build up that can have a number of potentially harmful side effects, including more frequent and severe heat waves (causing more heat related illnesses and death), depleted water resources, melting of polar ice caps and glaciers, increased air pollution, and crop damage.

Is Global Warming real? I do not know. There is plenty of reputable science on both sides of the argument, and I do not have enough expertise to make a decision. My own point of view is that if there is a way to become more energy efficient, cut operating costs, decrease the amount of pollutants that your company or organization discharges to the environment, and improve employee health, it makes excellent financial sense to take action. Public perception and political action is clearly on the side that favors it, and as they say, perception is reality.

How is Global Warming measured? The most prevalent greenhouse gas next to water vapor is Carbon Dioxide (CO<sub>2</sub>), and it is used as an indicator for the entire family of pollutants. It is measured in metric tons of CO<sub>2</sub> equivalent produced per year (MtCO<sub>2</sub>e/year).

How does the government plan to fight Global Warming? The House recently passed their version of a Cap-and-Trade bill, and the Senate is working on theirs. A Cap-and-Trade program consists of two parts, a carbon cap, or limitation on the amount of carbon (and therefore greenhouse gases) a company can produce and a trade program which essentially allows companies who produce lower amounts of pollutants to sell credits based on this difference on the open market.

What will the effect be? During the campaign, President Obama said "When I was asked earlier about the issue of coal...under my plan of a cap and trade system, electricity rates would necessarily skyrocket...even regardless of what I say about whether coal is good or bad, because I'm capping greenhouse gases, coal power plants, natural gas...you name it...whatever the plants were, whatever the industry was, they would have to retrofit their operations. That will cost money...they will pass that money on to the consumers." Clearly, this could be a major expense if you do not prepare.

Cap-and-Trade in more detail: Let's look at two different parts of the market:

- Generators: This includes commercial power plants as well as stand-alone, on site generating facilities, such as emergency diesel generators. These burn fuel to create the steam or mechanical energy which drives the turbines that generate electricity. The most commonly used fuels are coal, natural gas, oil, diesel fuel, gasoline, and propane, all of which are carbon based fuels. They will pass the cost of carbon taxes on to each of us, probably based on the amount of electricity we use, although it could be as a flat percentage of the carbon taxes they have to pay.
- Consumers: Companies and households that use electricity and carbon based fuels (home and business heating, gas for your car, etc) create greenhouse gases directly and will be responsible for related carbon taxes in addition to taxes based on the amount of electricity they use.
  - Companies that discharge more than their carbon cap will have two choices. They can either cut the amount of pollution they create, primarily by taking action to become more energy efficient, or they can purchase carbon "credits" from other companies that discharge less than their carbon cap.
  - Companies that discharge less than their carbon cap will have credits, based on the difference between their cap and what they are producing, that they can sell on the market to the high polluting companies. If they can become more energy efficient, they will have even more credits to sell. This can lead to a nice revenue stream for the company.

Let's look at some examples:

- Company A produces 342 metric tons of CO<sub>2</sub> equivalent (MtCO<sub>2</sub>e/year) and has a cap of 375

tons. This means that they have 33 ton's worth of carbon credits that they can trade or sell to other companies that are above their limit.

- Company B produces 588 metric tons of CO<sub>2</sub> equivalent (MtCo<sub>2</sub>e/year) and has a cap of 560 tons. In order to get below their cap, they can purchase credits from others such as Company A or take action to reduce the amount of pollutants they release, primarily by improving energy efficiency.

If you are above your cap, you need to compare the cost of improving energy efficiency versus purchasing carbon credits whose price will be set by the market. You need to consider the following:

- Yearly cost of carbon credits vs. the costs and potential payback and cash flow created by performing an energy efficiency upgrade.
- How much and where energy is being used.
- Current value of the equipment using the energy.
- Potential salvage value of the equipment.
- How much energy can be saved (and therefore how many carbon credits could be created).
- Tax rebates and credits for improved energy efficiency.
- Additional tax incentives, such as cost segregation, which allows faster depreciation.

WAIT A MINUTE! Earlier we wrote about cutting the amount of energy you use. What about this? Is there a way to avoid some of these costs? Absolutely. Here's a few facts:

- Green buildings provide an average of 30% on energy savings, 30 to 50% water use savings, 50 to 90% waste cost savings, and up to 35% in carbon emission savings.
- Reducing energy use 30% lowers operating costs by \$25,000 per year for every 50,000 SF of typical office space, and is equivalent to increasing net operating income and building asset value by 5%.
- Energy efficiency improvements provide savings for their entire product life, perhaps up to 15 years, well past the point where the savings have paid for the initial improvement.
- Improvements in energy performance and employee comfort can increase income due to improved productivity, perhaps as much as 10 times as high as the energy cost savings produced by performing the upgrade.
- Many energy efficiency improvement programs pay for themselves in less than 3 years.

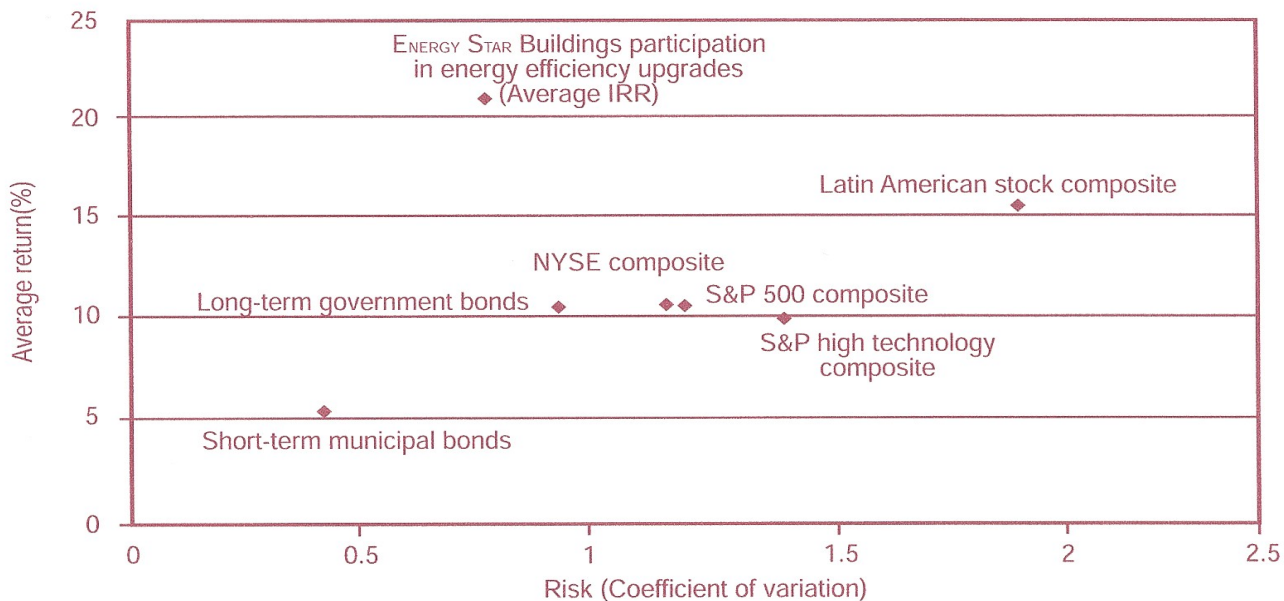
Do we have any proof? I'm glad you asked! In March, we completed an energy audit and upgrade program for the Novi Office Center, a 29,792 SF multi-tenant office building. Our Baseline Energy Audit reported that they produce 285 metric tons of CO<sub>2</sub> equivalent (MtCo<sub>2</sub>e/year).

By following the recommendations of our Investment Grade Audit, they can achieve the following results:

- Annual energy savings of \$20,784.
- Simple payback in less than 2 years.
- Net present value of \$115,986 and improvement in building asset value of over \$346,000.
- Improvement in energy efficiency by 32%.

A 32% increase in energy efficiency will create 81.8 metric tons of CO<sub>2</sub> equivalent (MtCo<sub>2</sub>e/year) savings per year. If their assigned cap is 300 metric tons of CO<sub>2</sub> equivalent (MtCo<sub>2</sub>e/year), they have 15 tons "worth" of credits they can sell. If they carry out the upgrade, they will have 96.8 tons "worth" of carbon credits they can sell, in addition to gaining the benefits shown above. And let's not forget the significant tax advantages of improving energy efficiency; in some cases, it can be as much as \$0.60 per square foot. That would make this building's net cost of doing an upgrade a whopping \$0.19 per square foot.

Come on, this is a business decision and what matters is my bottom line. What's the risk?  
 That's a good question. There are a lot of places to invest your money. But take a look at this chart.



Source: ENERGY STAR Building Upgrade Manual

How do we do this? Our energy efficiency services consist of a Baseline Energy Audit (BEA) and an Investment Grade Audit (IEA).

The BEA will help you make informed choices affecting energy use for your facilities by quantifying and communicating the value of improved energy performance for your organization. It will provide a complete understanding of your building's current energy usage:

1. Benchmark and analyze energy and water consumption at this building, obtain an indication of greenhouse gas emissions, and rate building energy performance relative to similar buildings nationwide.
2. Answer the following three critical questions:
  - (a) How much new energy efficiency equipment can be purchased from the anticipated savings calculated at a 20 and 30 percent energy savings rate. (Simple payback rate)
  - (b) Should this equipment purchase be financed now, or is it better to wait and use cash from a future budget?
  - (c) Will you lose money by waiting for a lower interest rate?
3. Provide a comparison of current energy management practices against nationally recognized standards.

The IEA begins the process of providing tools and information that can be used to cut your utility expenses. It will:

1. Quantify and communicate the value of improved energy performance for your organization.
2. Provide guidance in establishing an Energy Management Team and Energy Awareness Programs.
3. Compare energy and building use factors to determine root cause (if any) of energy cost price spikes and excursions and provide a prioritized list of corrective measures.
4. Provide a complete lighting retrofit analysis with three (3) levels of upgrade options. It will show full cost documentation and payback periods.
5. Provide a customized list of energy and water savings measures, including the expected range of cost savings/returns provided by each item implemented.

6. Set investment priorities to obtain the quickest and most sizable payback possible.

What's the bottom line? Simply this. You have 3 choices. You need to make a decision. For every day you delay, you lose that opportunity forever to cut operating costs, save energy, and help protect the environment. Time is money.

“Everyone needs an energy and climate strategy. Now”

*Energy Strategy for the Road Ahead / Scenario Thinking for Business Executives and Corporate Boards.  
Global Business Network, 2007.*

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#### About Facilities Performance Services:

Facilities Performance Services works with building owners with at least 20,000 SF of space at a single location. The result of our services are facilities (workplaces) that cost less to operate, are more energy efficient, improve employee productivity and safety, and present a positive image to clients investors, visitors, and the public. Visit us on the web at [www.fps-fm.com](http://www.fps-fm.com) or call us at (248)935-9097.



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