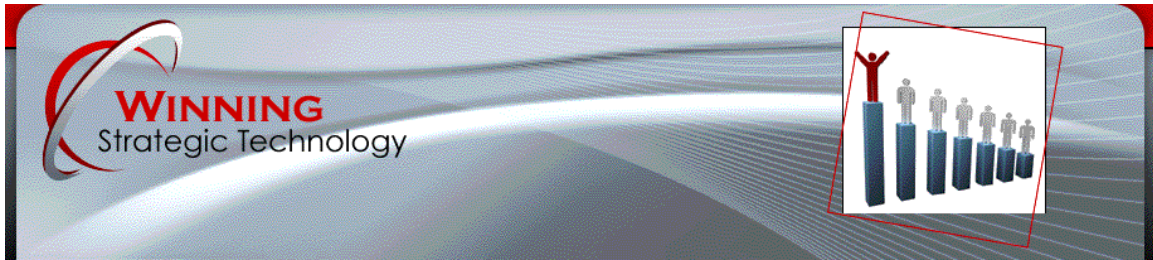


Winning Strategic Technology

Making the most of your IT investment



A Winning Strategic Technology White Paper

1719 Ninth Street
Alameda, CA 94501
510 318-0744
www.WinningStrategicTechnology.com

Cut Cost by Going Green

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Table of Context

Political Drivers	3
Economic Drivers.....	5
Business Opportunities	8
Green Procurement	8
Utilization.....	9
How it happens	9
Grim Outlook.....	10
Conclusion.....	10

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“The time is now for small and medium size business to build the strategy for a winning tomorrow”

Green IT is also known as green computing which means studying and using your companies computing resources in the most efficient of ways. It is through Green IT that manufacturers are able to produce environmentally friendly products. Green IT also encourages IT departments to consider more environmentally friendly options like power management, virtualization and developing proper recycling habits. In short, Green IT helps you utilize your IT infrastructure more powerfully and in the long run achieve significant cost savings.

Political Drivers

Last week, the European Union (EU) heads of state and government officials gathered together at the Spring European Council in Brussels, Germany. The issues they discussed were many but energy policy and climate protection were the outlines of their agenda. At the council, the European Union committed to set a target of 20% of the European Union's total energy supply to come from renewables by 2020. Whereas, at present only 6.5% of the European Union's energy is sourced from renewables.

It is to be noted that the European Union is already a leader in renewable energy technology. It commands 60% of the world's wind power market and not to forget the minimum target of 10% for the share of bio fuels in overall transport petrol and diesel consumption by 2020. Angela Merkel, German Chancellor and president of the European Union Council, also appreciated these goals and ambitions. She reportedly said, “Adopting an energy action plan will give the initial spark for a third technological revolution. We'll be going down completely new roads as far as technology and innovations are concerned.” She also said that the targets steps will put the EU in a position to make it clear to the international community that Europe is playing a pioneering role.

The European Union also set a firm target of cutting 20% of its greenhouse gas emissions by 2020 as part of the post-Kyoto arrangements. It even showed willingness of increasing the percentage up to 30% if other states such as China,

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India and the U.S are ready to take similar steps.

Another statement of appreciation came from Christian Kjaer, CEO of EWEA (European Wind Energy Association) at the end of the summer summit. He said, "European leaders have provided a powerful response to the looming climate and energy crisis, and the call from European citizens for more renewable energy. With today's decision, followed by effective implementation in the near future, Europe now has a real opportunity to change its energy supply structure towards a much larger share of indigenous, renewable resources, reduced import dependence and less exposure to unpredictable fuel prices."

What needs to be done now is a suitable legal framework so as to reach the 20% target, along with clear guidelines to market participants for the future direction of renewable electricity in Europe.

Another report suggests that Sweden has also made an astounding pledge to phase out fossil fuel use by 2020. Already, 26 percent of the country's energy comes from renewable resources and between a joint effort by the government and consumers; Sweden hopes to make that number even higher.

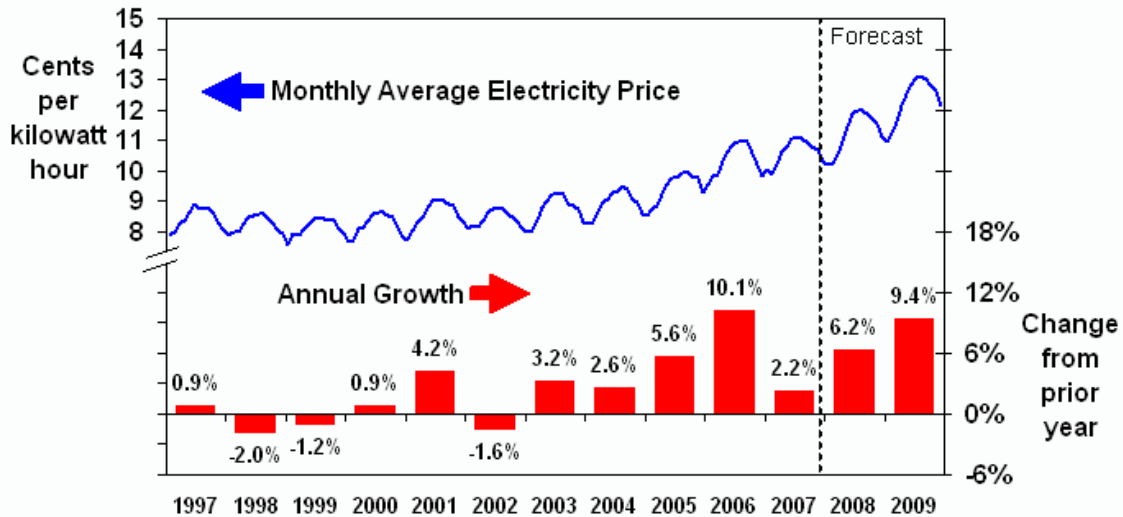
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Economic Drivers

The cost of electricity to power your IT infrastructure is 50% of the purchase cost over a 4 year life cycle base on current prices. The cost of electricity is projected to double over the next 5 years.

U.S. Residential Electricity Price



Short-Term Energy Outlook, October 2008



Research has shown that work load growth doubles every 2 years. That means that a company has to process more data, keep more equipment running and in turn use more energy. On top of this active content is becoming larger in size. All these statistics point to the fact that energy consumption by business IT department is set to sky rocket. This will take a major chunk out of business's already tight budgets.

Three leading research and management consulting firms, McKinsey, Gartner and Forrester Research, have published reports that highlight the possibility of cost savings by implementing Green IT strategies. The reports also contain a mixture of ideas, warnings and analyses for many technology companies, government and private groups which enable them to develop more environmentally friendly policies with in their organizations.

You can also handle high density computing and keep the capacity growing by using innovative cooling technologies. Gartner reports that High-density equipment, such

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as blade servers, demand enormous equipment power and air conditioning power. Rack enclosures can accommodate 60 to 70 (1U) units equating to 20,000 watts to 25,000 watts of power per rack. In addition, for every watt of equipment power, there is a need for another 50% to 60% for air conditioning equipment." Innovative cooling technologies can help you to handle the high-density computing facilities. They make it possible for the data center to increase its use of blade servers and thus accelerate the growth of IT capacity.

Georgia Institute of Technology's Center for the Study of Systems Biology implemented the advanced cooling technologies of IBM such as the innovative rear door heat exchanger and was able to maintain computing performance while reducing air-conditioning requirements by 55 percent. The resulting energy savings helped cut operational costs 10 percent to 15 percent and helped save an estimated US\$780,000 in data center costs.

After going through the three recent reports by Gartner, McKinsey and Forrester, one finds McKinsey's document "Reducing U.S. Greenhouse Gas Emissions: How Much at What Cost?" to be the most complex of all. The report is a product by McKinsey's U.S. Greenhouse Gas Abatement Mapping Initiative and is based on a research of two years. Various non-governmental organizations and private sector companies such as Shell and Honeywell also served in the competition of the project. Where Gartner and Forrester's reports concentrate on Green IT as a practice, McKinsey's report discusses energy efficiency in a broader sense. It takes into account not only the IT resources but also the office buildings as well as devices and products. The authors of this report claim that by implementing these energy efficiencies, the company could make up for at least eighty five percent of the estimated energy demands by 2030, which is incredible. It creates more impact than replacing inefficient industrial equipment and industrial processes, increasing fuel efficiency, improving soil, planting forests or switching to energy resources that can be renewed.

However, if the statistics of each of the above mentioned reports are observed, it becomes quiet clear that reducing costs is one basic reason that more and more corporations are considering Green IT Practices. For example, Forrester's report

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suggests that fifty five percent of those corporations which were surveyed pursue Green IT practices because of reducing energy expenses. The report also suggests that fifty percent of those surveyed see creating economically friendly environment as the top motivator for their switching to Green IT practices. The Gartner report also gives similar suggestions; the authors estimate that fifty percent of the polled corporations see potential power cost and reductions in CO2 emission as their reason to use the Green IT strategies in recreating their organizational environment. It also includes better managing of power usage of computers, printers and other electronic devices as reasons to Green IT strategies.

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Business Opportunities

More than 50% of servers in use today are in Server Rooms or small data centers. Based on estimates from the EPA Small and medium size companies that embrace best practices will save \$800M.

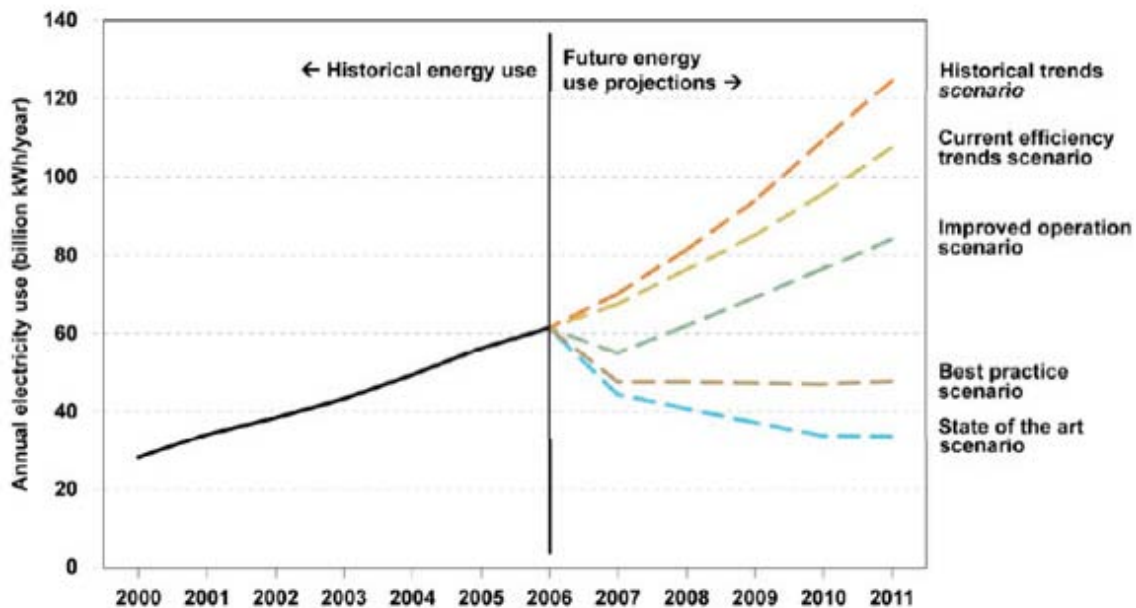


Figure 1 Source: EPA Report to Congress on Server and Data Center Energy Efficiency, 2007

Green Procurement

One of the easiest steps to save energy dollars is purchasing more efficient hardware. It can be helpful to think in terms of hardware as site Infrastructure and IT equipment. Site Infrastructure assets often have a 10 – 30 year life expectancy. IT equipment on the other hand is replaced every 3 to 5 years as hardware becomes obsolete. Strategy and business alignment are imperative in enabling the enterprise to make the appropriate decisions over time to achieve top value for minimum cost. To make this approach viable the organization needs to have a standards practice in place that guides the selection of hardware. While it is outside of the scope of this paper to discuss the role of standards in the organization you can look at a resource that can help inform decisions based on energy efficiency [://www.epeat.net/](http://www.epeat.net/).

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Utilization

The common company today has a server utilization of 5% to 15%. A Server will consume 60-90% of there maximum power even at this low level of utilization. Following Best practice approach strategy can increase utilization to 70 - 90 range.

How it happens

It is very important to know the metrics with which you can measure your progress and performance. Otherwise, it will be very difficult for you to manage your resources. In today's tough economic conditions, many organizations are concerned about their savings. They are considering utilizing their costs and energy in a proper manner and that is why many of them are switching to Green IT strategies. The good thing is that a number of companies, organizations, standard bodies and vendors are pulling information and metrics together to enable organizations to calculate the efficiency of certain data center design principles. This will help them to manage their resources properly.

Server energy performance plays a vital role in measuring the overall performance and progress of your organization. SPEC, a non profit association, formed a power and performance committee last year to come up with a way to calculate the amount of energy it takes for various servers to perform a set unit of work. The first workload that the new SPEC power metric will measure is server side Java. The energy measurements are made at the AC input to the system under test. In 2006, another organization EPA also announced that it would consider including servers in its Energy Star program, which already measures the energy efficiency of items like ceiling fans, dehumidifiers and desktop PCs. The Energy Star rating would be based on a metric developed by a vendor working group. The metric, which right now is just for 1U and 2U rack servers, uses a power meter to measure frequency, voltage, power factor and total harmonic distortion compared to CPU utilization. What comes out the other side is a curve with power consumption on the y-axis and percentage of workload on the x axis. Both SPEC and EPA are expected to work together to develop a comprehensive set of server performance metrics.

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Grim Outlook

According to AFCOM, data center power requirements are increasing an average of 8% per year while power requirements at the biggest data centers are growing at over 20% annually.

Increasing 20 or more percent per year 10.6%

Increasing 10-20 percent per year 32.3%

Increasing 1-10 percent per year 37.9%

Staying approximately the same 13.7%

Decreasing 1-10 percent per year 2.5%

Decreasing 10-20 percent per year 3.1%

Decreasing 20 or more percent per year 0%

SOURCE: THE DATA CENTER OF THE FUTURE: WHAT IS SHAPING IT? JOINT INTERUNITY GROUP-AFCOM STUDY. RICHARD M. SNEIDER, PH.D. RESEARCH DIRECTOR, JANUARY 2005

Another important thing that you need to consider when applying Green IT strategies is to manage and procure your assets. The question is that how do you do it? Don't worry, its not that difficult at all. Once you get the green signal from your CEO for a data center efficiency project, you can get down to reducing data center energy consumption. There are hundreds of potential starting points, but in order to deal with the problem properly, you need to have a strategy. You can start with the root components then you can progress through the chain to supporting facility infrastructure. Remember, Savings at the most basic IT level adds up to exponential savings on big-ticket facility requirements.

Conclusion

If you start implementing Green IT strategies today, you will start achieving energy efficient and cost saving results right away. You don't have to wait for a year or two. In a world where energy prices are going up, demand for technology is also increasing and additional governmental regulations require efficiency, you can get ahead of the curve by building a green strategy today and meet the growing needs of your company and save money.

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Green IT strategies will save companies money. With the incredible stress on budgets, the current economy is putting on operating budgets and so most companies can't afford not to go green. Also with experts predicting the explosion of computer data and application use in the near future, most IT department are gearing to dramatically increase their infrastructure and along with it their energy consumption. Couple that with the expected electricity costs to double with in the next 5 years, and companies have a very immediate need to cut down their energy and IT expenses. The solution it seems is Green IT strategies.

://svlg.net/campaigns/datacenter/docs/DCEFR_report.pdf

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<://i.cmpnet.com/ecotech.financetech.com/assets/GreenDataCenter.pdf>