

Winslow Environmental News

VOLUME 21, NUMBER 1

PUBLISHED BY WINSLOW MANAGEMENT COMPANY

FEBRUARY 2011

From Computers to Green IT

BY KARINA FUNK



Most of us think of the PC and keyboard at our desk when we hear the word “computer.” But today, computing devices are nearly ubiquitous, found in everything from smartphones to programmable thermostats, and information technology, or “IT,” is changing our lives dramatically. The impact of information technology on *life* can be wonderful – consider what medical imaging has done for preventative health. However, the *lifecycle* impacts of IT devices – as cost centers and as energy hogs – have not been taken seriously until recently.

For example: our incessant web surfing, which

has increased with the advent of mobile internet devices, is powered by an ever-growing array of massive server farms whizzing away in the background. As a result, data center requirements have been straining corporate budgets as well as the capabilities of electric utilities. The average data center today consumes as much energy as 25,000 households; according to McKinsey, data centers are estimated to consume the equivalent energy output from 10 new major power plants in the U.S. alone. Sophisticated IT customers, therefore, now consider energy efficiency and

Please see GREEN IT page 4

FEATURED COMPANY

IBM: FROM BIG BLUE TO BIG GREEN

BY ELLEN PFEIFER

When Stockholm, Sweden, a city of islands, wanted to combat its automobile congestion and attendant air pollution, it installed a

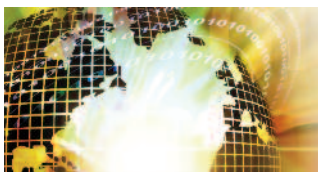


toll system to minimize the number of cars coming into and leaving the city, particularly at rush hour.

When St. Lawrence College needed to increase its IT capacity but wanted to minimize risk, reduce energy costs, and demonstrate its commitment to sustainability, it installed a Scalable Modular Data Centre. The new system provides seven times the power in a smaller space than its predecessor, with the number of servers dropping from 70 to 12.

Contemplating its aging and deteriorating water and sewer infrastructure, the District of Columbia installed advanced predic-

Please see IBM page 7



MARKETBEAT PAGE 2

Investing in Climate Change Adaptation

Keeping an eye out for anomalies and their significance can deliver a potential upside



PORTFOLIO UPDATE PAGE 6

World's Largest Solar Site Fast Tracked

Fisrt Solar sells Arizona site to NRG Solar, remains developer & construction contractor

EARLY BATTLEGROUND FOR THE E.P.A.

There has been plenty of press coverage, and coverage in our newsletter, of the pending clash between a newly-empowered Environmental Protection Agency (EPA) and a variety of allied forces determined to roll back the agency's power. But few observers expected the EPA to be the ones to strike first.

On January 13, EPA revoked the permit for Arch Coal's proposed Spruce No. 1 Mine in West Virginia, one of the country's largest mountaintop-removal coal mining projects. EPA cited new evidence about the impacts of mountaintop removal, stating in their new assessment that the project as permitted would cause unacceptable environmental damage, particularly to local rivers. It was only the second time in history that EPA had revoked its own permit, and the first time for a coal mine, demonstrating the stark differences in the agency under the Bush and Obama administrations.

It would appear that opposition to EPA's decision is coordinated. Arch Coal stated that it was "shocked" by the action and feared that EPA "overreach" would have a "chilling effect on future U.S. investment." Sen. Joe Manchin (D-W.Va.) called the decision a "shocking display of overreach" that would have a "chilling effect on investments."

Stay tuned; this case and others like it will be the battlefields where the EPA's authority will ultimately be determined. — Ed.

CHANGING PORTFOLIOS FOR A CHANGING WORLD

BY JACKSON W. ROBINSON

In his groundbreaking work, **The Structure of Scientific Revolutions**, Thomas Kuhn taught us that natural anomalies are typically ignored until a new scientific framework becomes the norm and a permanent change occurs in how we observe the world. Importantly, if one can spot the significance of anomalies before change occurs, the rewards can be enormous once the new framework is established.



Given the recent readings on our green barometer, we believe that climate change anomalies are accelerating. 2010 offered record heat waves, extreme storms, excessive rains, crippling droughts, massive flooding, and major mud slides – many of the outcomes which climate scientists have been warning us about for years.

These situations have had enormous human impacts – perhaps best exemplified by the estimated 56,000 fatalities last year attributed to the heat wave in Russia. They've also led to huge economic losses – the reinsurer Munich Re said recently that total economic losses from natural disasters reached \$130 billion worldwide in 2010.

Outside of direct costs from damages, the dramatic changes in global weather patterns have resulted in severe crop shortages in parts of the world. Lester Brown, founder of Worldwatch

Institute and a highly regarded environmental policy expert, recently noted that a variety of short-term factors are affecting food supplies, such as biofuel policies, and an unsustainable amount of land

devoted to soybeans (largely used to feed livestock). But above all, he says, water shortages and climate change will constrain future output. Extreme weather could clearly wreak havoc on global supply; for example, it is only a

matter of time before a heat wave, drought or other weather event hits the U.S. or Chinese breadbaskets and creates a devastating supply shock in global wheat markets. (As this edition went to press, the United Nations issued an alert that the worst drought in China in over 60 years was in fact threatening this year's wheat crop in China; Xinhua, the state-run news agency, reported that "crop production has fallen sharply.") Perhaps most disturbing is his reminder that every 1° C increase in temperature will reduce grain yields by approximately 10 percent – a frightening statistic when we consider that even optimistic climate scenarios for the coming decades predict a global temperature increase of several degrees.

On the plus side, forward thinking towns and cities across America are taking steps to adapt. Examples include the rezoning and infrastructure

plans being implemented in Norfolk, VA, to deal with a 14 inch increase in sea level since 1930, and the impressive model developed in Chula Vista, CA for implementing comprehensive adaptation plans. We believe these examples demonstrate the type of thinking that prudent investors should embrace as they consider how climate change will impact their portfolios, and what they can do to adapt.

The challenges of climate change are indeed creating some attractive investment opportunities. Large, multinational corporations will certainly play an increasingly important role in adaptation, as costs mount in the years and decades ahead; here, I've chosen to focus on three smaller and emerging companies that are providing adaptation solutions to three separate climate change impacts – rising temperatures, water scarcity, and food shortages.

1) Rising Temperatures

As the thermometer rises over time, we face a dilemma – how do we keep cool without continually adding to the greenhouse gas burden in the atmosphere? **Lennox International Inc.** is a global leader in climate control products for the heating, air conditioning, and refrigeration markets, and its product line is exemplary in terms of energy efficiency, and therefore emissions intensity. Recently, the company announced a definitive agreement with The Manitowoc Company, Inc. to acquire substantially all the assets of its Kysor/Warren business. Kysor/Warren is a leading manufacturer of refrigerated systems and display cases that will expand Lennox's addressable refrigeration market to include food retail and supermarkets throughout North America.

2) Water Scarcity

With demand rising for agricultural irrigation, due to mounting worldwide population growth and shortages caused by unprecedented droughts, the efficient use of water in agriculture is a necessity. One of the leaders in this

space is **Lindsay Corporation**, a manufacturer of self-propelled center pivot and lateral-move irrigation systems used in the agricultural industry to improve crop production while conserving water, energy, and labor. Founded in 1955 and headquartered in Omaha, Nebraska, Lindsay offers farmers an important sustainability tool to increase food production using less water.

3) Food Shortages

Weather-related global food production shortages are compounding the existing shortfall in edible and affordable proteins. Part of the solution may be provided by **Bioexx Specialty Proteins, Inc.**, a relative newcomer that has developed the world's first economical method to extract food-grade protein from canola seeds. Bioexx's patented technology uses a low-temperature process that is enabled by the use of solvents with a lower boiling point than solvents such as hexane, which historically have been used to refine protein. Bioexx's process is able to deliver more food value per ton, and have a lower carbon footprint than other conventional processes, all while using solvents with greatly reduced toxicity.

Bioexx recently began production at its Saskatoon, Saskatchewan plant and expects to build a second, larger plant in Minot, ND to triple its protein production capacity. It is already in discussions to launch canola protein products in multiple categories; we expect that the first product launches will be in the growing sports nutrition category, such as protein bars or shakes.

Today, a key driver for sustainable products and services is the increasing awareness of climate change anomalies. While the mitigation of climate change is feasible, we believe that risk-averse investors should be listening to the anomalies and investing accordingly. □

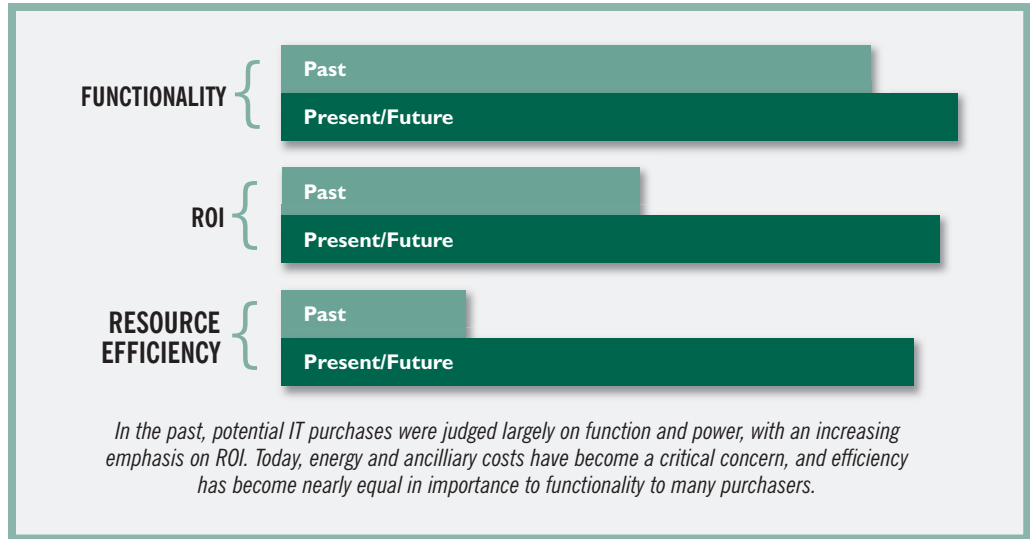
The challenges of climate change are indeed creating some attractive investment opportunities. Large, multinational corporations will certainly play an increasingly important role in adaptation.

other green attributes to be as important to performance as raw computational muscle.

At Winslow, we take a broad view of what “green” means as we look for innovative solutions to our environmental problems. And we believe that Green IT leaders are helping to build a better world, while helping customers improve their bottom line. As we define the term, “Green IT” companies provide products and services that offer more efficient power management; reduced energy,

much less energy than the discrete parts it replaces. This technology advantage has allowed it to establish a strong market position in recent years, and its product shipments in 2010 alone allowed customers to save nearly 500 gigawatt-hours of energy consumption, avoid over 300,000 tons/yr of CO2 emissions (the equivalent of removing 80,000 cars from the road for a year), and achieve a real return on investment, with over \$40mn saved in energy costs. “Particularly in big data centers, energy ROI is one of the first calculations they’ll

Volterra has figured out how to replace a lot of power management components – inductors, capacitors, transistors and other integrated circuits – with a single chip that uses much less energy than the discrete parts it replaces.



water, or materials use; greater functionality; and more attractive returns on capital invested. As shown in the chart above, metrics such as Resource Efficiency, ROI, and Functionality are all very important to IT purchasers in today’s market, and we believe IT companies will need to excel on all three fronts in order to ensure long-term success.

One example is **Volterra**, whose products convert and deliver power to high-end micro-processors, such as those found in servers and notebook computers. Volterra has figured out how to replace a lot of power management components – inductors, capacitors, transistors and other integrated circuits – with a single chip that uses

do,” says Volterra’s founder and CTO, Anthony Stratakos. Mr. Stratakos detailed for us one reference customer that ended up saving \$50 in energy per server, over a 3-yr expected deployment. “That \$50 of energy cost savings is significantly more money than Volterra’s bill of materials,” so even if the competitive solutions were free, they are more costly to the customer over time. Indeed, for many telecom and other clients who deploy servers for 10 year lifecycles or longer, VLTR’s chips save the customer more than \$1 in lifetime energy cost for every \$1 in revenue paid to Volterra.

There are many other environmental issues that Green IT leaders are tackling. Lawrence Berkeley

National Labs has concluded that “standby power” – the electricity drawn by our TVs, microwaves, stereos and laptops that are turned off but still plugged in – accounts for 10-15% of residential energy use and may account for 1% of total CO2 emissions worldwide. **Power Integrations** is a company that is seeking to slay the “energy vampire” by providing high-power, low-current power supplies that reduce this phenomenon, for use with appliances, notebooks, and other consumer electronics.

Another issue begging for innovative solutions is electronic waste, or “e-waste.” E-waste is of increasing concern, particularly given the quick product cycles of our gadgets, and the fact that these gadgets are all chock-full of materials that are precious if recycled but toxic if thrown away. The Environmental Protection Agency (EPA) estimates that over 350 million electronic units weighing over 3 million tons entered the American waste stream in 2007 and 2008, and more than 85% of that waste went into dumps and incinerators. There are various ways to deal with this problem before the electronics reach a landfill. Many companies have embraced a “Design for Environment” philosophy

which makes it easier for electronics to be recycled or even upgraded and re-used, in contrast to what has been termed “Design for the Dump.” In the absence of high recycling rates, companies could also focus on using fewer toxic materials in the first place. Another EPA study estimated that in 2005 more than 77 million pounds of lead from e-waste were landfilled, 2 million pounds were incinerated, and only 15 million pounds were recycled. While we would encourage continued efforts to step up recycling rates for electronic materials, clearly there is market demand for computers and devices with less dangerous contents.

Customers clearly desire solutions that will help them improve along the Green IT metrics shown in our chart, and we believe that companies providing these solutions are poised for rapid growth. With this high growth comes high volatility and, at times, immature business models. But as more companies truly provide economic solutions to our energy and environmental problems, we predict that this industry will mature, and that the offerings from these Green IT leaders will become as ubiquitous as the devices on our desks and in our back pockets. □

E-waste is of increasing concern, particularly given the quick product cycles of our gadgets, and the fact that these gadgets are all chock-full of materials that are precious if recycled but toxic if thrown away.

THE GREATEST STORY NEVER TOLD

In this age of media sensationalism, you would think a story about the possible end of the world (at least as we know it) would get a lot of press.

But climate change coverage in the mainstream media plummeted in 2010, particularly in the U.S. According to analysis of The Daily Climate’s media archive, there was a 30% drop in climate-related stories in English from 2009 to 2010. Another telling statistic, from Drexel University’s Robert Brulle, a long-time analyst of nightly network news: in 2009, the Copenhagen climate conference generated 32 network news stories totaling 98 minutes of airtime. The 2010 Cancun conference: a total of one 10-second news clip. Overall, network news coverage dropped by 62% from 2009 to 2010. Last year’s climate coverage was so miniscule, he said, that he doubts his data. “I’m trying to check it again and again,” Brulle said of the 2010 data. “It’s so little, it’s stunning.”

For those of us looking for continuing coverage, there is still a group of reporters who write extensively on the topic. The five most prolific: Andrew Revkin, *New York Times*; Darren Samuelsohn, *Politico*; Louise Gray, *London Daily Telegraph*; Alister Doyle, *Reuters*; and Robin Bravender, *Politico*.

And of course you can always expect a healthy dose of coverage from us. – Ed.

PORTFOLIO UPDATE

First Solar Sells World's Largest Solar Site

First Solar, Inc. announced in December that NRG Solar, subsidiary of NRG Energy, agreed to acquire the 290 MW Agua Caliente solar project from First Solar. The project, located in Arizona, is scheduled to be completed by 2014 and has a 25-year power purchase agreement with PG&E. When completed, Agua Caliente is expected to be the largest operational photovoltaic (PV) site in the world.

"We are very pleased to further expand our relationship with NRG as the owner of Agua Caliente, the first of our multi-hundred-megawatt utility-scale projects to begin construction," said Rob Gillette, CEO of First Solar.

The project has secured all necessary permits for construction and the early construction phases have begun. First Solar is the project developer, the engineering, procurement and construction contractor; and it will also provide operations and maintenance services. A key component of the acquisition is a U.S.

Department of Energy federal loan guarantee of up to \$967M, announced in January; the project is expected to be one of the first in the U.S. to start construction under the new federal program.

Jamba Partners With Nestlé To Launch Ready- To-Drink Beverages

Nestlé USA and Jamba Juice Company announced a renewed partnership for the development of a new line of ready-to-drink energy beverages, Nestlé Jamba All-Natural Energy Drinks, to be available for retail sale in the northeastern United States in early 2011.

The two companies had originally announced a partnership in 2007, but the plan was postponed while Jamba developed and executed its refranchising strategy.

"We are thrilled at the possibility of a renewed partnership with Jamba Juice," said Rob Case, president of the Nestlé Beverage Division. "Nestlé Jamba All-Natural Energy Drinks will allow retailers to capitalize on the growing trend of consumers seeking more health-oriented, fruit-based natural beverages."

Since announcing their intent to build a licensing growth platform, Jamba Juice has made significant progress in developing licensing alliances to manufacture, market, and distribute Jamba-branded offerings through grocery, convenience, and other retail channels. Both Nestlé USA and Jamba Juice Company continue to explore a number of other joint

opportunities to extend the Jamba brand.

Newalta Announces Resumed Capital Spending for 2011

Newalta, Canada's leading recycling and waste handling firm, announced in December its planned capital budget of \$100 million for 2011. The announcement marks a resumed focus on growth for the company, which had not made significant capital investments for several years previously.

Al Cadotte, Newalta's President and CEO, said that funds were to be allocated across a wide range of high-return, low-risk growth opportunities, and that 60% of the budget would target specific growth projects in its Facilities and Onsite divisions.

Within the Facilities division, which operates centralized company recycling and waste centers, the firm will focus on efficiency improvements, construction of new facilities, and expanded services to customers. Within the Onsite division, which provides service at customer locations, the company plans to invest in advanced equipment to meet client demands, as part of its strategy to convert short-term project work into long-term service contracts.

A. O. Smith Sells Electric Motor Division for \$875 Million

A. O. Smith Corporation announced in December the sale

of its Electrical Products Company, one of the largest manufacturers of electric motors for residential and commercial applications in North America, to Regal Beloit Corporation for approximately \$875 million.

The transaction, which has been approved by both companies' boards of directors, is expected to close in the first half of 2011.

A. O. Smith Chairman and CEO Paul W. Jones said, "The electric motor industry has been undergoing a significant transformation over the last several years; the consolidation in the marketplace, which has accelerated this year, prompted us to evaluate the potential sale of our motor business, with the expectation that we would reinvest the proceeds into high growth opportunities."

With the sale of its electrical products business, A. O. Smith Corporation's core business will be manufacturing residential and commercial water heating and purification equipment, which reported sales of \$1.1 billion for the first nine months of 2010. The company remains committed to building on its leadership in the water heating equipment business, continuing to offer a comprehensive product line featuring the best-known brands in North America and China.

Jones said, "We intend to use these proceeds to explore opportunities in high growth markets, with an emphasis on water-related technologies."

IBM continued from page 1

tive software to monitor usage patterns so that the municipality could perform preventive maintenance on areas considered to be at high risk for infrastructure failures.

What company did these customers turn to for help in meeting these challenges? IBM – familiarly known as Big Blue, but now increasingly coming to be seen as “Big Green.”

Leveraging its super-computing powers, its huge workforce (including the world’s largest aggregation of mathematicians), and the highest amount of R&D spending (\$6 billion a year) of any of its peers, IBM is directing massive consulting and service projects that are driving energy efficiency, reducing pollution, and increasing water efficiency worldwide. As a result of this effort, its Smarter Planet initiative is expected to contribute 20% of IBM’s revenue growth through 2015. But not only is it helping companies and municipalities go green, IBM is also modeling that commitment to sustainability in its own operations. For all these efforts, the company achieved the #1 ranking in the world in Newsweek Magazine’s annual Green Rankings.

Data, Analytics, Interconnection

At the heart of IBM’s “Smarter Planet” initiatives is the company’s ability to harness immense quantities of data, analyze it, correlate it, make predictions from it, apply it to systems and infrastructures, and use it to change operational behavior in real time. So, for example, at CenterPoint Energy in Texas, IBM is “helping build an intelligent utility network that detects outages and equips homes with smart meters—allowing homeowners to make smarter consumption decisions.”

Similarly, in Washington, D.C., the company is engaged in a new research initiative to build personalized travel routes for commuters to avoid traffic gridlock, “utilizing new mathematical models and predictive analytics technologies to analyze and combine multiple possible scenarios.”

Smart Transportation

An even more comprehensive traffic easing plan, though, is the Stockholm road toll program that the company helped design. To discourage everyday commuters from coming into the city (or

leaving it), a system of 18 control points was set up at city entrances and exits. Like the Fast Lane and Smart Pass schemes in the U.S., cars with transponders were detected and charged a toll electronically, with charges set higher during peak times. For drivers who did not elect to install a transponder, the system photographed license plates and, using technology such as Radio Frequency ID tags and IBM-designed character recognition software, relayed the license plate information to the vehicle registry database, and subsequently to a billing system.

During the one-year pilot program in 2006, there was an “immediate impact.” By the end of the trial, “traffic was down nearly 25% and train and transit passengers increased by 40,000 a day. There was also a drop in emissions from road traffic by eight to 14% in the inner city, and greenhouse gases such as carbon dioxide fell by 40% in the city.” Initially skeptical, the citizenry was persuaded and approved a referendum to make the program permanent.

Smart Water

In October, Big Blue and the City of Dubuque, Iowa announced the launch of a three-month Smarter Sustainable Dubuque Water Pilot Study. The project will analyze the data collected through smart water meters that are being installed throughout the city. With the help of 300 volunteer households, Dubuque and IBM will analyze consumption trends and patterns with the hope of “encouraging behavior changes resulting in conservation, cost reduction, and leak repair.”

The project is part of an ongoing collaboration between IBM and Dubuque aimed at “making this community of 60,000 one of the first ‘smarter’ sustainable cities in the US.”

Next Generation Data Centers – More power, less energy

Demand for IT capacity is snowballing and so is the energy needed to power it. According to eWeek’s “Green IT News,” “the explosion of connectivity, online applications and new services has driven the average business to increase its server capacity by six times and storage by 69 times over

Please see IBM page 8

Winslow Environmental News

Published by
Winslow Management Co.,
A Brown Advisory
Investment Group
99 High St.
Boston, MA 02110
866-804-5414

WEB ADDRESS:
www.winslowgreen.com
as a service to our clients
and other interested persons

EDITOR-IN-CHIEF
Jackson W. Robinson

MANAGING EDITOR
Ethan Berkwitz

CONTRIBUTORS
Ellen Pfeifer
Karina Funk

This document is printed on Rolland Enviro100 paper, which contains 100% post-consumer content, is processed without the use of chlorine, and is produced using biogas energy.

.....

This newsletter is published solely for informational purposes, and Winslow Management Company is not recommending any action based upon it. The information is based on sources we believe to be reliable, but it is neither all-inclusive nor guaranteed to be accurate. Opinions reflect our judgement at a particular time and are subject to change. This publication is not intended to be an offer or solicitation to buy or sell securities. Investors should obtain individual financial advice based on their own circumstances before making an investment decision. Past performance is not a guarantee of future performance of an investment.

Copyright 2011 Winslow Management Company. All rights reserved. Reproduction or redistribution by any means is prohibited.

IBM continued from page 7

the last 10 years.” IBM’s answer – for 400 data centers around the world – is a plug-and-play approach that has resulted in 20-30% lower energy costs for some clients. According to IBM’s Steven Sams, VP of Site and Facilities Services, ‘plug-and-play’ is a modular approach that is “more cost-effective and flexible because it allows clients to build in smaller increments, pay as they grow, and add capacity when needed, consequently deferring as much as 40-50 percent of the capital and operating costs.”

“Virtualization” of physical servers – that is, compacting multiple server environments on a single piece of physical hardware – results in a more centralized, consolidated data center. So, at Bryant University in Smithfield, RI, IBM implemented its Scalable Modular Data Center infrastructure that allowed the school to move from 75 physical servers to just 40. Thanks to the smaller footprint and a more efficient cooling system, the payoff was a 30% improvement in energy efficiency and the ability to scale up as needed very quickly.

Practicing What it Preaches

As it assists others to go green, IBM is also modeling environmentally responsible behavior. The company has asked its 28,000 suppliers in more than 90 countries to measure and manage their environmental impacts. According to the *Harvard Business School Review*, it is “asking companies to deploy environmental management systems, to measure environmental impacts and establish goals to improve performance, publicly disclose their metrics and results, and cascade these requirements to any suppliers that are material to IBM’s products.”

The action is not meant to be punitive, stresses Wayne Balta, IBM’s Vice President for corporate environmental affairs and product safety. Rather, “our overall interest is to systemize environmental management and sustainability across our global supply chain so it helps our suppliers build their own capacity in a way that’s not only good for the environment but their business.”

From its products, to its operations, to its influence on its thousands of suppliers, Big Blue is indeed looking very Green these days. □



**Invest in
tomorrow’s green
companies - today.**

Green investment
services for individuals
and institutions

W I N S L O W
MANAGEMENT COMPANY

Green Investing Since 1983™

866.804.5414

winslowgreen.com