

Winslow Environmental News

VOLUME 17, NUMBER 4

PUBLISHED BY WINSLOW MANAGEMENT COMPANY

NOVEMBER 2007

FEATURED COMPANY

First Solar, Inc.: Here Comes the Sun

BY ELLEN PFEIFER

Over the past few years, as climate change and alternative energy have become hot stories in the mainstream media, alternative energy



companies have become hot investments – and none have been on a hotter streak for longer than solar companies. The allure of solar power is clear: electricity from the sun is free, clean and inexhaustible. And while there has been no shortage of companies and investors trying to get in on the solar action, most of solar's promise remains in the future, as solar-generated electricity is still

Please see *FIRST* page 4

Environmentalism is often defined by problems and crises. However, we at Winslow have observed that for every environmental challenge faced by our society, there are exciting new markets and new companies springing up to provide a green solution. This idea permeates our philosophy of green investing and that's what this edition of Winslow Environmental News is all about.



Suddenly, green is everywhere. Every magazine and newspaper seems to feature articles on how to live a more environmentally friendly lifestyle. Companies in seemingly every city and town tout their fuel-efficient products or green corporate headquarters.

But if green is now a red hot trend, where is it leading? What technologies are really helping to improve the environment now? Which concepts will become the growth industries of the future, and which ones are just pipe dreams? Winslow has spent a lot of time lately analyzing the field and organizing our thoughts about the many new green products and services available – what we call Green Solutions™. We have developed our own “ecosystem” to organize Green Solutions companies into seven groups, or “communities,” in

ecological terms. Within each community, we look for the most promising investment opportunities.

Clean Energy

The first community in our Green Solutions ecosystem is clean energy – products or services associated with generating energy, either for the grid or distributed generation, with reduced greenhouse gas emissions. The category includes companies that:

- Manufacture solar panels, wind turbines or similar alternative energy production systems;
- Produce bio-fuels or bio-gas;
- Operate or develop geothermal, wind energy or similar alternative energy generating projects; or
- Produce clean energy enabling technologies.

We don't claim that this is an exhaustive list of

Please see *GREEN SOLUTIONS* page 7

MARKETBEAT PAGE 2

Winslow Introduces Green Solutions™

Environmental problem-solving companies address challenges in seven key areas

PORTFOLIO UPDATE PAGE 6

Metabolix Bio-based Plastic Goes Shopping

Target gift card made from biodegradable corn-based plastic in 129 stores

CARBON DISCLOSURE PROJECT

The Carbon Disclosure Project (CDP) is an independent global initiative that aims to raise investors' and businesses' awareness of climate change risk and opportunities, by annually surveying the world's largest companies on their climate change strategy and greenhouse gas emissions and management. In September, CDP's fifth annual report, CDP5, was launched in New York with keynote remarks delivered by former president Bill Clinton. The survey requesting information was sent on behalf of CDP and the 315 signatory institutional investors representing over \$41 trillion of assets under management, including Winslow Management Company.

More than half of the companies in the S&P 500 responded to the CDP survey — 56% versus last year's 46% — a sign that awareness of the importance of climate change is increasingly permeating corporate America. And while 81% of the responding companies view climate change as a potential risk to their business, 69% of them see potential business opportunities, a view that Winslow shares.

We are proud to be part of this important initiative. Analysis and details of companies' responses to the CDP are available on CDP's website, www.cdproject.net.

MARKET BEAT

Green Solutions Investing at Winslow

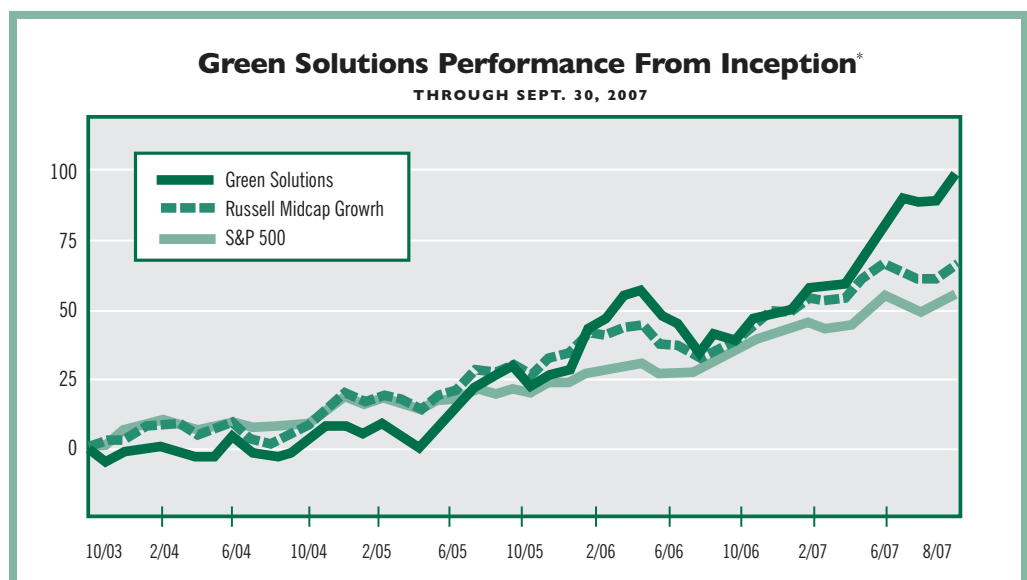
BY MATTHEW PATSKY, PARTNER AND PORTFOLIO MANAGER

Throughout Winslow's history, companies providing solutions to environmental problems have played an important role in our portfolios. Until recently, however, the list of those companies that also presented compelling investment opportunities was relatively short. As a result, Winslow has historically invested in a mix of these environmental problem solvers — which we now call Green Solutions™, as described in the main article of this issue of *Winslow Environmental News* — as well as environmentally responsible companies in mainstream industries such as healthcare or software. This approach has generated above-average investment returns as well as exposure to a variety of companies helping to build a sustainable society.

Times have certainly changed. Organic food was once considered a fringe product for fringe customers; today there is a \$36 billion global market for organic food. Likewise, the idea of

using wind turbines and solar panels for power on a large scale seemed like a dream ten years ago; today, wind and solar companies are generating nearly \$25 billion in revenue worldwide — and growing rapidly. Such green markets are the natural outgrowth of macro trends, such as increasing awareness of climate change, high oil prices, concerns for energy security, water scarcity, resource depletion and a societal shift towards health and wellness.

The number of compelling investment opportunities within green markets has grown along with the markets themselves. Several years ago, as these green markets began expanding, I was charged with the task of developing Winslow's second investment strategy — the **Green Solutions™** strategy — focusing exclusively on those companies providing solutions to today's environmental challenges. We began managing accounts using this approach in 2003, and have met with success over



* Composite inception October 31, 2003. Past performance does not guarantee future results. Returns are presented net of management fees and include the reinvestment of all income. The Russell Midcap Growth Index measures the Russell Midcap companies that have higher price-to-book ratios and forecasted growth values. The S&P 500 Index is a basket of 500 stocks considered to be widely held. An audited performance report and accompanying disclosure is available upon request.

the ensuing years.

Our approach to managing Green Solutions accounts is quite consistent with Winslow's overall investment philosophy. We carefully search for potential long-term leaders within a variety of green solutions markets; perform rigorous analysis to evaluate corporate strategy, operational strength, quality of management and other financial and non-financial factors; and construct focused portfolios of 40-50 companies that represent our best investment projections. The companies held in these portfolios run the gamut of green solutions markets – clean energy, resource efficiency, water management, sustainable living and others.

Since Green Solutions portfolios focus exclusively on companies with a product or service that directly addresses environmental challenges, they have differing characteristics from Winslow's domestic, small-cap growth portfolios. For example, as green markets have developed, some companies with small market capitalizations, such as Whole Foods and First Solar (the featured company in this issue of *WEN*) have grown with the green markets into medium and large cap companies. At the same time, other more "traditional", and often larger, companies have developed substantial businesses that now offer green solutions. And a number of long-time leaders and

novel innovators within green markets are based outside the U.S. Green Solutions investing offers the flexibility to invest in all of these – a typical Green Solutions portfolio would include both domestic and international mid-cap companies, with a mix of small and large-cap securities.

The accompanying chart compares the performance of the Winslow Green Solutions Composite to its benchmark, the Russell Midcap Growth Index, as well as the S&P 500 Index.* The Green Solutions strategy has outperformed both indices since inception, with performance becoming stronger over time as macro trends such as sustained high oil prices and increased climate change awareness have taken root in our economy and our consciousness.

As growth investors, we have experienced firsthand the difference between the hype surrounding an exciting but unworkable idea and the development of a significant market opportunity. Green Solutions, in our view, has become a very significant market opportunity, and one worthy of a dedicated, long-term investment strategy. It is our hope that Winslow's collective experience and our comprehensive approach to Green Solutions investing can contribute to a cleaner and greener society, as well as our clients' financial security and success. □

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Matt's Excellent Adventure

Recently, Matt Patsky traveled to Chiapas, Mexico with fellow members of the board of Root Capital, a nonprofit organization offering affordable financial services to community-based businesses operating in environmentally sensitive areas of Latin America, Africa and South Asia. When he received the invitation, he wasn't sure what to expect, but knew it would be an adventure – and it was.

They visited a rural organic coffee cooperative in Tzajalchén and an organic honey cooperative in Ocosingo, both of which Root Capital helped finance. After hiking through the coffee fields, the group celebrated with the members of Tzajalchén's co-op, and were presented with ceremonial hats, blooming with ribbons to resemble the plumage of the sacred quetzal. Matt reflected, "The trip made us deeply aware of the dramatic improvement in quality of life brought by the fair trade and organic programs that have been sponsored by the companies in which Root Capital invests. While we work in our day to day jobs trying to play a small role in making the world a better place, it is easy to lose sight of the progress we are making – and this trip was an excellent reminder."



Matt in the coffee fields

FIRST continued from page 1

generally prohibitively expensive to produce without governmental subsidies. One company, however – First Solar, Inc. – is poised to change that, and investors have taken note. So what’s all the excitement about?

according to analyst estimates. However, First Solar requires only a fraction of the semiconducting material that silicon systems use. Combined with an efficient manufacturing process, this lets First Solar sell their modules for about 40% less than silicon-based modules – no small difference. This

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First Solar installation in Dimbach, Germany.

Low Cost Solution

Traditional solar PV energy systems use a crystalline form of silicon as their semiconducting material. But as the number and scale of solar panel manufacturers has increased over the past few years, solar-grade silicon has become more and more in demand, and more and more expensive, to the point where it has been the limiting factor in the industry’s growth. To find an alternative to expensive silicon, companies such as First Solar have experimented with a variety of materials and technologies.

Based in Phoenix, Arizona, First Solar (NASDAQ: FSLR) manufactures thin film photovoltaic modules for utility scale projects using cadmium telluride (CdTe) as its semiconducting material, trading efficiency in converting sunlight to energy for more cost competitive products. CdTe is significantly less efficient at converting light to electricity compared to silicon. First Solar currently converts about 9.5% of sunlight to energy compared to up to 18-20% for some crystalline manufacturers,

helps bring down the cost of solar power, which has been one of the chief obstacles to solar gaining traction as an energy source. In fact, management has a stated goal of reaching “grid parity” – offering solar energy at the same price as traditional energy, the holy grail for all alternative energy sources – in the 2010-2012 timeframe. Analysts agree that this is an achievable goal.

Cadmium: A Pollutant Defanged

Cadmium, which is salvaged from waste produced during zinc smelting, is toxic if released into the environment. However, FSLR’s “up-cycling” stabilizes and sequesters the material, offering a solution to a pre-existing environmental problem. Indeed, analysis of the company’s CdTe usage by the US Department of Energy and Brookhaven National Laboratory got a clean bill of environmental health.

“CdTe is much more stable than the Cd and Cd(OH₂) used in batteries. Further, it is prevented from leaching because it is encapsulated between glass sheets,” states author Vasilis M. Fthenakis in a

2004 life cycle analysis available on FSLR's website. The study concludes that "large-scale use of CdTe PV modules does not present any risks to health and the environment, and recycling the modules at the end of their useful life completely resolves any environmental concerns. During their operation, these modules do not produce any pollutants, and, furthermore, by displacing fossil fuels, they offer great environmental benefits. CdTe in PV appears to be more environmentally friendly than all other current uses of Cd, including Ni-Cd batteries."

Although FSLR could justifiably pride itself on simply eliminating cadmium from the waste stream, it considers this just the beginning of its environmental mission. With cradle-to-grave product lifecycle management and a commitment to the health and safety of its employees, FSLR has earned ISO 9001:2000 Quality Management and ISO 14001:2004 Environmental Management certifications for its facilities. Through ongoing technology improvements, the company has succeeded in reducing the amount of cadmium in its solar modules by 20%. It has also refined its designs to encapsulate the cadmium, and to prevent breakage and fire damage through the 25+ year life span of a module. FSLR collects and recycles its manufacturing waste, ensuring that there are no cadmium air emissions; that process water is treated and filtered to remove waste; that solid waste is collected, purified and recycled; and that all employees are routinely tested to assure that they are not being exposed to harmful materials. And, as noted in the life cycle analysis, when a First Solar module comes to the end of its 25-year lifecycle, the company has established a Collection and Recycling Program to ensure it is not improperly disposed of in municipal waste.

Future Prospects and Competition

While the promise of solar powered energy is quite exciting, it is still in an early stage of technology deployment. "Although solar energy

* Past performance is not indicative of future results.

Results described are from November 17, 2006 through October 15, 2007, closing price \$134.95 on October 15.

accounts for only 0.1% of the energy currently used in the U.S. it has great potential. It is still more expensive than fossil fuel generated electricity, but the gap is closing," says an August report on Forbes.com. NanoMarkets LC, a technology research firm, predicts that, "because worldwide energy prices are rising fast and photovoltaic prices are falling fast, photovoltaics will carve off a big slice of the energy market and could eventually account for as much as 20 percent of the U.S. market's energy needs."

However, First Solar faces keen competition from other firms with their own proprietary technologies. While crystalline silicon remains the PV standard, several companies such as Miasolé and Daystar Technologies are ramping up their ability to make thin films using a copper, indium, gallium and selenide compound known by its acronym CIGS. Such CIGS systems typically achieve better efficiency than CdTe (19.5% vs. 9%), but have not yet been rolled out at a commercial scale.

But so far, customers around the world seem to like what they see, and First Solar has been steadily expanding sales as well as the production facilities needed to meet the increased demand. They currently have over 2 GW of modules contracted for large project deployment over the next 5 years. In addition to the existing 90MW manufacturing plant in Ohio, FSLR is completing a 120MW manufacturing plant in Germany, and expects to open three 120MW lines in Malaysia, for a total nameplate capacity of 570MW by the end of 2009. Shareholders have not been disappointed either, as the value of First Solar's stock has increased a whopping 586% from \$20 to over \$134 over its first 11 months of trading from mid-November 2006 through mid-October 2007*. We believe that sunny skies may be ahead, if First Solar continues its constant improvement and its commitment to protecting the environment throughout the life cycle of its products. □

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PORTFOLIO UPDATE

Bankrate, Inc.

(NASDAQ: RATE)

NORTH PALM BEACH, FL – In October, Bankrate launched the “Living Green, Saving Green Guide” on its website, www.bankrate.com. The guide has in-depth articles on climate change and per capita climate emissions, facts on environmental myths and links to more information sources. The guide also has a slew of tips on how to incorporate environmental thinking into everyday life in categories such as home, work, school and food. The Guide also discusses green building and remodeling, with specific tips for different areas such as kitchen, laundry and landscaping.

According to Tom Evans, Bankrate’s Chief Executive Officer and President, “Our Green Guide offers our consumers ideas and tools to help them discover ways to live green and save green. It’s a resource we think consumers can bookmark and turn to time and time again.”

SurModics, Inc

(NASDAQ: SRDX)

EDEN PRAIRIE, MN – In late June, SurModics and Merck & Co. announced a license and research collaboration agreement to pursue the joint development and commercialization of products that combine Merck’s proprietary drug compounds with SurModics’ I-vation drug delivery system for the treatment of serious retinal diseases.

SurModics President and CEO, Bruce Barclay, said the agreement is “an important milestone in the history of SurModics and marks the first license of our sustained drug delivery platforms in the ophthalmology market. Over the past three years, and as a result of the hard work by our employees, we have made tremendous strides evolving our business strategy and focusing on new market opportunities. We are now in a position to provide more components of the final product and better leverage our expertise in developing bio materials, surface modification and drug delivery technologies to provide significant benefits to patients.”

SurModics also announced two acquisitions in August. Brookwood Pharmaceuticals is a leading provider of drug delivery technology primarily to the pharmaceutical industry, providing its proprietary polymer based technologies to companies developing improved pharmaceutical products. The company has

particular strength in proprietary injectable microparticles and implant technology, both based on biodegradable polymers, to provide sustained drug delivery. BioFX Laboratories, Inc., provides substrates to the in vitro diagnostics industry, a critical component of diagnostic test kits used to detect and signal that reactions have taken place.

Nova Biosource Fuels, Inc.

(AMEX: NBF)

HOUSTON, TX – Nova Biosource Fuels announced in late September that it had issued and sold \$55 million of 10% convertible senior secured notes due in 2012 to qualified institutional buyers in a private placement.

“This private placement is a key part of our financing structure,” said Kenneth T. Hern, Chairman and CEO of Nova, “These funds will be used to complete the already announced acquisition of the Clinton County BioEnergy refinery and to fund the company’s growth strategies including the construction of a new biodiesel refinery.”

Nova intends to use the proceeds of the offering for the acquisition and modification of the 10 million gallon per year biodiesel refinery in Clinton County, Iowa. Modifications to the refinery will incorporate Nova’s proprietary biodiesel production process to enable the refinery to process low cost, high free fatty acid feedstocks,

such as animal fats, oils and greases or corn oil extracted from dried distiller’s grains produced by ethanol plants. Nova also intends to use some of the proceeds for other general corporate purposes, including funding a portion of the remaining construction costs of a 60 million gallon per year biodiesel refinery in Seneca, Illinois.

Metabolix Inc.

(NASDAQ: MBLX)

CAMBRIDGE, MA – Metabolix, a bioscience company focused on developing clean, sustainable solutions for plastics, fuels and chemicals, announced in July that a new gift card by Target, made using Mirel bio-based plastic, is now available in 129 Target stores nationwide. Mirel is a new family of bio-based plastics made from corn that provides an excellent alternative to traditional, petroleum-based plastics. Unlike conventional plastics, Mirel biodegrades in a variety of environments including soil, home compost, wetlands, rivers and oceans.

Metabolix and Archer Daniels Midland are producing and marketing Mirel through their joint venture, Telles. The company is currently working with more than 50 prospects on more than 70 applications, including consumer products, packaging, single-use disposables and products used in agriculture and erosion control.

clean energy technologies. Nor do we expect any one of these technologies to be the entire solution to the huge problem of climate change. But together they can be part of the solution.

Environmental Services

Pollution abatement, remediation and containment may not be as glamorously green as clean energy, but such services provide key environmental benefits. In this community are companies that:

- Manage waste in an environmentally responsible manner;
- Control pollution;
- Remediate existing environmental contamination; or
- Assist other companies with environmental management.

In this era of tightening environmental regulations and increased environmental awareness, corporations will need these companies' services to help meet current and future pollution and greenhouse gas restrictions, as well as to benefit from their own environmental activities.

Resource Efficiency

Almost all of our environmental problems derive from our use and misuse of resources – fossil fuels, minerals, land, water and energy. We believe that resource efficiency – using less to achieve more – may be the most under-appreciated community in the Green Solution ecosystem.

Here we include companies that:

- Enable users to consume less energy or resources;
- Monitor, meter or control resource use; or
- Recycle or reuse pre- and post-consumer materials.

By reducing the amount of water, energy and materials we use, we will reduce the pollution – and the costs – associated with their consumption. We expect such green solutions to grow in prominence as awareness of their benefits increases.

Water Management

Finding and creating new sources of usable water has become extremely important as water

tables continue to drop and water demand continues to rise. Improved water management will include companies that:

- Provide water or wastewater services and infrastructure;
- Offer water purification technologies; or
- Provide water management or conservation technologies and services.

In the not-too-distant future, water technologies that may seem unnecessary now, such as seawater desalination, will become quite important as shortages and droughts – such as the severe one that is currently threatening drinking water supplies in the American Southeast – underscore the preciousness of this resource.

Green Building

Over the past decade, and the past year in particular, the idea of sustainable architecture has become increasingly popular, creating a growth market for green building products and services. Winslow first wrote about this trend in a June 2006 WEN article and white paper, *Buildings for a Greener Planet*. Since then, interest in the subject has grown exponentially. Companies in this community:

- Provide preconstruction services to minimize environmental impact;
- Manufacture environmentally friendly building components or efficient energy, heating, cooling or lighting systems; or
- Manage, or invest in, green buildings.

According to the U.S. Green Building Council, the green building industry, which was mostly a gleam in a few visionaries' eyes only a decade ago, is now worth over \$12 billion and growing.

Green Transportation

We believe a shift to green transportation has already begun, and will continue for decades. Components of this new transportation community will include companies that:

- Manufacture efficient vehicles and components;
- Operate, service or equip mass transportation systems; or

Please see GREEN SOLUTIONS page 8

Winslow Environmental News

Published by Winslow Management Co. 99 High St. Boston, MA 02110 866-804-5414

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

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DESIGNED AND PRODUCED BY N. J. de Sherbinin Adv. and Design

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GREEN SOLUTIONS continued from page 7

- Provide advanced batteries or other elements of advanced fuel systems.

While we don't know what will be powering new cars 20 years from now, we do know that some of the new cars sold today will still be on the road then. We believe companies that are tweaking current vehicles for increased efficiency, as well as those designing the next generation of technologies, will play important roles in the green transportation revolution.

Sustainable Living

A new trend towards healthy living is emerging as climate-conscious consumers evaluate the personal and environmental impacts of the foods, goods and services they purchase. This increased concern for health, wellness and the environment provides opportunities for many sustainable living companies, such as those that:

- Produce, distribute or sell organic and natural foods and products;
- Manufacture complementary medicines; or

- Provide products or services to improve individual health and wellness.

Sales of organics have increased by more than 15% each year for the past 10 years, and now represent about 3% of U.S. food sales. We believe that this growth demonstrates a dramatic shift in the way people make lifestyle decisions, and is a powerful indicator of future growth for the entire sustainable living community.

A Green Shift

We believe that American and global societies are in the midst of a green shift, with the environmental wellbeing of the planet becoming a top priority. As citizens who have long been concerned about environmental crises such as climate change, we are inspired by the progress that we see. And as investors, we are excited by the number of Green Solutions companies that have grasped the business opportunities implied by the green shift. □

For a more in-depth version of this article, please see our white paper "The Green Solutions Ecosystem" on our website, www.winslowgreen.com



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