Small Wonders
How the Creative Drive of Entrepreneurial Small Businesses is Combating the Recession, Creating New Jobs & Economic Growth, Solving Energy Problems, Combating Global Warming and Protecting the Environment
I say this because Small Wonders celebrates the prowess of small businesses at detecting, seizing, and exploiting new economic opportunities. In this lies our salvation. Look at history. In past recessions small businesses led the nation's recovery by creating new jobs and innovations. For example, in the recession of the 1970s, Apple Computers, Microsoft, Oracle, and Genentech were all started, and all were launched on a shoestring budget. According to the Kauff  man Foundation, perhaps the nation's leading think tank on entrepreneurship, this happens because many people who lose their jobs cope by becoming entrepreneurs. Some of these new enterprises take off, creating new jobs and new wealth.

Will this happen again in the present recession? There is good reason to think so – even to think that this time it will be bigger and better. Why? Starting a new small business has never been easier or cheaper than it is now, thanks to new technology. All an entrepreneur needs is a cell phone, a computer and a kitchen table. (Don't scoff. Hewlett Packard, Google, and Apple all got their start in garages. Michael Dell founded PC's Limited in his dorm room at the University of Texas at Austin.)

On top of this, commercial rents have dropped markedly. And because a lot of older firms are going out of business, office furniture and equipment can be had for a song. If employees are needed, the entrepreneur can choose from a pool of talented, experienced and skilled people who have been laid off and are eagerly looking for work.

What's more, starting a new small or personal business has become one of the coolest things people can do. This wasn't true back in the days when big business was glamorous, but now everybody wants to be an entrepreneur. So as a response to this recession, countless people are likely to start personal, home-based businesses or virtual, online businesses (good for the environment). Many of these will be knowledge-based businesses (also good for the environment.)

In this recession, small businesses are likely to lead the nation's recovery again by creating green jobs and clean energy innovations. In fact, a green entrepreneurial boom is in the offing. Here's why:

1. Entrepreneurs tirelessly seek economic opportunity. “Going green may be the largest economic opportunity of the 21st century,” venture capitalist John Doerr asserts. “It is the mother of all markets.”
2. Entrepreneurs tirelessly seek financial gain. In the global economy the principal driver of new wealth is innovation. Today, innovation’s main chance lies in dramatic increases in efficiency and resource productivity, all good for the environment.
3. The economic opportunity that going green represents is literally infinite. Every economic activity that humans engage in can be performed more efficiently and with fewer resources. “Doing more with less” is the name of the game and there's plenty of room for anyone who wants to play.
4. Going green involves more than financial gain. For many, protecting the environment is a cause that arouses passion, and passion is a key element in business success. Venture capitalists look for it in the people they fund.
5. Entrepreneurs love to solve problems. As much as anything, they want to go green. “The best brains in the country are no longer
working on the next pharmaceutical drug or the next Silicon Revolution,” states Vinod Khosla, Co-founder of Sun Microsystems. “They want to work on energy.”

6. Going green also combats global warming, a necessity we must face in any case.

And because green innovations create jobs and profits, going green via entrepreneurship is politically attractive.

7. President Obama’s administration is resolutely committed “going green,” meaning entrepreneurs can operate in the knowledge that this opportunity has firm, consistent political backing.

8. Lastly, a green entrepreneurial boom has already begun. For the last three years, the solar energy industry has experienced explosive growth. In 2008 alone, wind power capacity grew by a staggering 50 percent. For seven consecutive years, investments in clean technology have increased dramatically. This growth is not limited to clean technology. Other green sectors of the economy – organic agriculture, green building, ecotourism, and so on – have been growing substantially faster than their non-green counterparts for at least five years.

True, the current economic crisis has slowed (but not halted) the momentum of this green entrepreneurial boom, but this slowdown may be temporary. If history is any guide, the green boom is likely to be emboldened by a surge of newly-minted entrepreneurs driven by a thirst for innovation and the daring of the hungry.

Now for the bad news...
What if history is not any guide?

In the past, many green entrepreneurs have financed their businesses with their own savings and loans from friends and family. Some have taken the risk of borrowing against their home equity lines or using their personal credit for growth capital. More established young companies have relied on bank loans, credit lines and credit cards for their businesses. As I write this, the financial crisis has limited the availability of all of these sources of capital.

This puts me in a quandary.

I know how to promote green small businesses and entrepreneurs, but I don't know how to reverse the drying up of access to credit and capital that is now threatening their welfare, if not their existence.

Who does?

A new recruit to the CSBE network is Marilyn Landis, President of Basic Business Concepts, Inc. in Pittsburgh. Marilyn, who has more than thirty years of experience in financial services, chairs the Entrepreneurial and Innovative Funding Sources Task Force of the National Small Business Association (NSBA).

Seeking Marilyn's help, I told her about Andy Kruse, who is one of the green entrepreneurs in my network.

Andy is co-founder of Southwest Wind Power in Flagstaff, Arizona, a small business that is the world’s largest manufacturer of small wind generators. Even in the recession, Southwest Wind Power expects to grow 90 to 100 percent in 2009, chiefly because he will sell 10,000 – 15,000 units to China. Andy started his business by maxing out his credit cards and borrowing money from his parents.

I asked her: can a green entrepreneur still do that today? Is this recession different from past recessions? Here is her answer.

This recession is different because the avenues to access capital for start up entrepreneurs are different.

A start up green entrepreneur can still use credit cards – but not to the extent prior, or as beneficially as before. As soon as they start to run up a balance on one card – it will impact their personal credit score – dramatically increase interest rates – reduce credit limits on others – etc., etc. The end result is debt on terms that can, and do, change regularly and rarely for the better.

This makes credit cards a very limited and very unstable source of capital in today’s world. Even individuals with an 850 credit score will find themselves very quickly in an Alice-in-Wonderland world – and that is no foundation for a business as untried as a start up.

And parents – they still love us – but their investments, savings and retirement accounts were all slashed with the stock market decline. Suppliers used to be a good source for a jointly beneficial venture – but they are facing the same economic realities.

If Marilyn is right about this, history may not be the guide we need.

Fortunately, many people far better qualified than me are working intensively to answer this question, Marilyn’s task force among them. The Obama Administration is wrestling with this as is Congress, and a whole passel of experts in academe and elsewhere.

So I am taking myself off the hook. In short, I am not going to attempt to become an overnight expert on small business financing even if this is the life or death issue that confronts our heroes, the green entrepreneurs.

With many experts working to help small entrepreneurs on these fronts, I won’t attempt to take on these matters here. Our website will help small business owners keep pace with these complex, contentious and rapidly unfolding issues.

With this defense in place, here is Small Wonders, a report I am particularly proud to present in this troubled time. When all is said and done, I still believe that entrepreneurs – given half a chance – will find a way out of this mess. There’s only one proviso: entrepreneurs have got to be given half a chance. I think we can manage that.

{ WHAT IS A SMALL BUSINESS? }

For the purposes of this report, we use the definition established by the U.S. Small Business Administration (SBA) which is firms with fewer than 500 employees. Of course, the vast majority of small businesses are far smaller. Ninety percent of small businesses employ fewer than 20 people.

{ DISCLAIMER NOTICE }

All information presented in Small Wonders about the businesses presented as good examples is drawn from websites of the businesses themselves or other published sources.

The Center for Small Business and the Environment assumes no responsibility for the accuracy of the information presented. The business descriptions here do not imply endorsement of the technologies or the management of these companies.
ABOUT THE CENTER FOR SMALL BUSINESS AND THE ENVIRONMENT

The Center for Small Business and the Environment (CSBE), a small non-profit organization based in Washington, DC, performs pro bono advocacy on behalf of green entrepreneurs. We contend that this new and emerging category of business operates in the public – and the planetary – interest.

CSBE also strives to facilitate the greening of small businesses through increased energy efficiency, expanded use of renewable energy technologies, and other ecologically sound business practices.

CSBE’s origins go back to 1973 when British economist E. F. Schumacher published *Small is Beautiful*, a prophetic book that critiqued the “big is better” assumptions of conventional economics and celebrated, instead, the creativity and productivity of small-scale enterprises.

*Small is Beautiful* attracted the attention of Byron Kennard, a community organizer whose work for The Conservation Foundation in the 1960s had helped lay groundwork for the first Earth Day on April 22, 1970. Schumacher became Kennard’s friend and mentor, and the two worked together to advance the book’s vision until Schumacher’s death in 1977.

Two decades later, Kennard observed that the revolution in communications technology vastly strengthened and expanded the capacity of small-scale enterprises to achieve efficiencies and to produce environmentally benign innovations. In the Information Age, small is more beautiful than ever. To exploit this new and huge potential for environmental good, Kennard founded the Center for Small Business and the Environment in 1998.

In true entrepreneurial style, CSBE operates as a “virtual organization.” We represent a network of small business leaders, green entrepreneurs and others around the country that believes small scale enterprise holds the key to both economic and environmental wellbeing.

CSBE’s sole full-time employee, Byron Kennard, works from his home office.

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Contact Information

The Center for Small Business and the Environment  
PO Box 53127  
Washington, DC 20009  
Email: byronk@aboutcsbe.org  
Tel: (202) 332.6875  
Fax: (202) 332.8355  
Web: www.aboutcsbe.org
THE LITTLE ENGINE THAT CAN

It's no wonder that small business is lauded as “the engine” of the American economy. Here is why the description fits.

America’s 27 million small businesses make up half of the nation’s economy. These small firms are amazingly decentralized, diverse and dynamic. They are doing everything under the sun. These firms produce 51 percent of the private sector output and make 47 percent of all sales, but that’s just for openers. Get this:

- American small businesses employ half of the private sector workforce, and pay nearly 45 percent of total U.S. private payroll, according to the U.S. Small Business Administration (SBA).
- According to the National Federation of Independent Business (NFIB), small business constitutes the world’s second largest economy, trailing only the United States as a whole.
- Small businesses can be found in virtually every nook and cranny of society, from the inner city, where they provide 80 percent of jobs, to rural areas, where they provide 66 percent.
- Thirty-seven percent of all manufacturing is now done by small firms, according to the National Association of Manufacturers (NAM).
- In recent decades, small businesses have created 60 to 80 percent of all net new jobs in the U.S. In the most recent year with SBA data (2005), small businesses created 979,102 net new jobs, or 78.9 percent.
- In the past 15 years small business created 21.9 million jobs while big business created only 1.8 million, according to the National Small Business Association (NSBA).
- Small businesses are the fount of innovation. They generate five times more patents per R&D dollar than large businesses. They are about twenty times more productive than universities in generating patents per dollar.
- Small businesses are loaded with brains and talent. They employ more scientists and engineers than large businesses (32 percent versus 27 percent), and more than universities and federal labs combined (32 percent versus 29 percent).
- Small business is a respected social institution. In the annual Harris Interactive Polls taken to measure public confidence in American institutions, small business has always ranked in the top two. Since 1973, only the military has received confidence ratings as high as small business.

Imagine having the "economy’s engine" driving efforts to protect the environment and combat global warming. That’s happening! Small business is greening about as fast as it can, and producing manifold benefits, both economic and environmental.

ECONOMIC GROWTH AND SMALL GREEN BUSINESSES

Small green businesses play a surprisingly large part in the economy. Sparked by innovative small businesses, green segments of the economy are:

- Serving surprisingly large markets;
- Growing in economic size and significance;
- Growing significantly faster than their non-green counterparts;
- Growing even in face of the present economic slowdown.

Much of this growth is stunning:

CLEAN TECHNOLOGY

Despite the economic downturn, Clean Edge reports a 40 percent increase in revenue growth for solar photovoltaics, wind, biofuels, and fuel cells in 2007, up from $55 billion in 2006 to $77.3 billion in 2007.

GREEN LIFESTYLE BUSINESSES

The U.S. market for green and sustainable products and services has reached an estimated $209 billion. The consumers attracted to this market represent a sizable group in this country. Approximately 19 percent of the adults in the U.S., or 41 million people, currently make up this the market.

ECOTOURISM

Ecotourism is growing at a rate of 10 to 30 percent a year, much faster than
other kinds of tourism. It now attracts one in five tourists worldwide.

**ENERGY EFFICIENCY**
Energy efficiency programs are now saving more than 40,000 gigawatt-hours of electricity annually, avoiding the need to build 24 large, 500 megawatt power plants. (The number of energy efficiency programs being operated by state and local governments has risen by 400 percent since 2003.)

**ENVIRONMENTAL CLEAN-UP INDUSTRY**
Even the unglamorous environmental clean-up industry grew a respectable 7 percent in 2007, its fourth consecutive year of growth over 5 percent. Around 80 percent of this $300-billion industry consists of small businesses.

**GREEN BUILDING**
The U.S. Green Building Council’s Leadership in Energy and Efficiency and Design (LEED) guidelines represent the gold standard in the field. The number of LEED-registered and LEED-certified green building projects is increasing at rates approaching 70 percent to 80 percent year-over-year.

**ORGANIC AGRICULTURE**
Since 1990, the market for organic products has grown rapidly, averaging 20 to 25 percent per year to reach $33 billion in 2005.

**RECYCLING**
In 2007, recycling pulled in $236 billion in revenues and employed more than a million people. The industry accounted for about 2 percent of the U.S. gross domestic product.

Where does this stand now that the economy has tanked? Will the economic crisis abort the growing green entrepreneurial boom described here? As of this writing, it is hard to say. The situation is rapidly changing. Many small companies and small projects are surviving, while big companies and big projects are faltering.

Since the green sectors of the economy are already generating economic growth, it makes sense to use them as a launching pad to stimulate the economy.

The Obama administration should use economic stimulus funds to make more capital available to small businesses engaged in energy efficiency, renewable energy, and “micropower” – small, modular devices that generate renewable power on a small scale for use on-site (such as roof-top solar panels and micro wind turbines). As it is, such companies are trying to scale-up, lower costs, and improve delivery chains to their customer base. An infusion of new capital will enable them to meet market demand that is already growing.

For the latest information about the recession’s impact on small businesses, see the accompanying website to this report at www.smallwondersreport.org
NEW JOBS AND GREEN JOBS

As previously noted, small businesses create virtually all new jobs.

WHAT’S THE DEAL HERE?

Small business’s dominant role in job creation was first documented in 1979 when David Birch, an MIT economist, published The Job Generation Process, a book that sent shock waves through the business world. Birch’s seminal research turned conventional wisdom on its head by showing that small businesses, not big ones, create most new jobs.

The job creation prowess of small businesses is rife with positive implications for the environment. Take just small business energy efficiency alone.

America’s small businesses consume about one-half of all energy used for commercial and industrial purposes at an estimated cost of $98.5 billion annually.

According to the Environmental Protection Agency’s Energy Star Small Business program, small business owners making energy efficiency upgrades can typically achieve 30 percent savings or more. If all small businesses did so, they’d save almost $30 billion annually. That’s not chicken feed. Instead of throwing this money down the drain, they could use it for other purposes, including expanding and hiring more employees.

ENERGY COST SAVINGS = JOBS RETAINED & CREATED

While it’s impossible to calculate job creation by small business in general terms, it is possible to make such calculations for selected small business sectors. Look just at these three small business trade associations: the National Restaurant Association (380,000 members), National Grocers Association (50,000 independent stores), and the National Association of Convenience Stores (140,655 stores).

If all the members of just these three associations reduced energy consumption by 30 percent, they would save nearly $6 billion annually, enough money to enable these three sectors to pay the annual salaries of nearly 250,000 employees.* It would also eliminate more than 46 million tons of greenhouse gas emissions each year, the equivalent of 10.1 coal fired power plants.

ENERGY EFFICIENCY & JOB CREATION

* NOTE: If economic conditions continue to worsen, small businesses can use this money to keep their doors open, to simply survive, thereby preserving much existing employment that is now being threatened.

A recent study concludes that California’s energy-efficiency policies created nearly 1.5 million jobs from 1977 to 2007, while eliminating fewer than 25,000. The study was conducted by David Roland-Holst, an economist at the Center for Energy, Resources and Economic Sustainability at the University of California, Berkeley.

The study found that while the state’s policies lowered employee compensation in the electric power industry by an estimated $1.6 billion over that period, it improved compensation in the state over all by $44.6 billion.

The study states that, “Consumers were able to reduce energy spending, and these savings were diverted to other demands. When consumers shift one dollar of demand from electricity to groceries, they create jobs among retailers, wholesalers, food processors and other businesses.”

California adopted strict energy-efficiency policies in 1978 in the wake of that decade’s energy crisis. As a result, California’s per-capita demand for electricity is now 40 percent below the national average.

WHAT ABOUT NEW GREEN JOBS?

Green jobs advocates – environmental, labor and minority leaders, and many politicians, both Democratic and Republican – are calling for the creation of millions of “green collar jobs” in clean energy technology and energy efficiency.

The transition depends upon the availability of countless qualified sheet-metal workers, cement masons, plumbers, welders, carpenters, electricians, skilled machine operators and so on. It also requires many workers possessing new skills: energy auditors, solar system specialists, and wind power installers.

If green jobs are to be created, then small businesses must create them. To have a prayer of succeeding, green job advocates are going to have to connect their goals to the economy’s engine. The good news is that small businesses are already at work creating new green jobs. Take the following three companies on page nine for example.

A report from the American Solar Energy Society shows that as many as one out of four workers in the U.S. will be working in the renewable energy or energy efficiency industries by 2030.
Solargenix recently opened the first manufacturing plant in South Chicago to be built in 35 years. The city agreed to purchase $5 million worth of solar-energy systems from Solargenix over the next three years in order to bring the company and new manufacturing jobs to Chicago.

The plant makes solar water heating collectors that the city is installing on municipal buildings such as fire houses, police stations, aging centers and other facilities with large water consumption, to provide domestic hot water. The Chicago plant enables Solargenix to manufacture solar thermal collectors at high capacity.

“We are delighted to have Solargenix Energy open a manufacturing operation in Chicago, not only because of the jobs it brings, but also because its product is environmentally friendly,” said Mayor Richard M. Daley.

The report shows that these industries already generate 8.5 million jobs in the U.S., and with appropriate public policy, could grow to as many as 40 million jobs by 2030.

The 40 million jobs that could be created in renewable energy and energy efficiency by 2030 are not just engineering-related, but also include millions of new jobs in manufacturing, construction, accounting, and management.

Renewable energy and energy efficiency industries today generate nearly $1 trillion in revenue in the U.S. contributing more than $150 billion in tax revenue at the federal, state, and local levels, according to the report.

A DISSENTING OPINION
In fairness, however, we must also add that reports like that above have been subjected to criticism that they overstate the case for green jobs. Here is one critique.

Academics and researchers from four U.S. universities released a joint study, Seven Myths About Green Jobs, that analyzes the assumptions, findings and methodologies of green jobs projections and benefits put forth in reports issued by several special interest groups, industry associations and international organizations which have subsequently been widely referenced by government officials, policymakers and the media.

The debate over green jobs, however, should not obscure the historical fact that small business is the primary creator of new jobs. In dealing with the economic crisis, Congress and the Obama Administration should add two and two, tying public policy on green jobs to the engine of the economy.

SMALL BUSINESS & INNOVATION
In the main, innovation is good for the environment; that means small business is good for the environment.

In Small Is Beautiful, Fritz Schumacher observed that large organizations, despite their vaunted economies of scale, tend to become mired in complexity, and hence, slow, cumbersome, and wasteful. By contrast, the compulsive cost-cutting and nimble flexibility of small businesses tend to conserve material and energy.

Traditionally, small business is the source of most innovations because the independent-minded people who conceive innovations don't fare well in large organizations. Besides, it is more affordable and practical to experiment on the small-scale; there it is okay and affordable to fail.

Of course, it's also easier for small-business owners to take risks than it is for risk-averse big businesses. Small-business owners can change their business model quickly when needed. They don't have to answer to anyone but themselves.
No committees and boards are looking over their shoulder. Small-business owners greatly value this freedom and independence. They like to call their own shots. Society is the beneficiary.

Tinkerers working in garages created the Industrial Age. Today, their counterparts, working on computers, are creating the post-Industrial Age. In this new era, little businesses are running rings around big businesses. Entrepreneurial small firms actually produce five times as many patents per dollar as large companies and 20 times as many as universities.

**BRAINS & TALENT = “CREATIVE DESTRUCTION”**

Plus, there’s this: small businesses are loaded with brains and talent. They employ more scientists and engineers than large businesses (32 percent versus 27 percent), and more than universities and federal labs combined (32 percent versus 29 percent).

All this adds up to something big.

Some small clean tech companies are laying the basis for entire new industries and, in the process, mounting a challenge to industrial-era giants. This process is called “creative destruction.” Here are two examples.

**EDENSPACE**

Bruce Ferguson is searching for what he calls “the holy grail of the biofuels industry.” Scientists at his company are developing plants that contain enzymes in the stems and leaves that will help them turn into ethanol more easily. By reducing the need for the heat, acids and enzymes now required in processing plants into the biofuel, he aims to reduce the costs to the consumer. “That’s the headwind the entire industry faces now,” he says.

The startup quickly developed a specialty in this type of cleanup, known as phytoremediation. It has since used the plants to decontaminate locations such as a U.S. Army firing range in Ft. Dix, N.J. that was polluted with lead. It used Indian mustard and sunflower plants to absorb the toxin through their roots in 2000. It has also used its fern to clean a variety of arsenic-contaminated properties for the U.S. Army Corps of Engineers in the Spring Valley area of Washington, D.C. since 2004. Some are residential lots that have residues that may date back to long-ago tests of chemical weapons, such as mustard gas from WWI. Others may have been contaminated by treated lumber or pesticides. “Excavating soil is not a satisfactory answer, particularly if you are trying to preserve existing trees where excavation may damage the roots,” says Ferguson.

For its next act on the cleanup front, Edenspace is working on breeding plants that change color when they detect a contaminant in the soil. “They’re not ready for prime time yet,” he says. It costs from $5 to $10 million for regulatory approval for a new bioengineered plant, because of the legal and regulatory work involved and the preparation of environmental impact statements. “That’s the headwind the entire industry faces now,” he says.

To keep his projects moving, Ferguson continually revises the business plan for the 30-person company to raise funds. The company currently has Department of Energy grants of about $4 million and another $10 million in funding from private investors in its coffers. Most of that is dedicated to the company’s work on biofuels. “We want to find ways to make renewable fuels that are environmentally sustainable and affordable by the consumer,”

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**Small Businesses Are America’s Innovators**

**Patents Per Employee Outstrip Those Of Larger Firms**

WASHINGTON, D.C. – Small businesses are the innovators of the American economy as they obtain many more patents per employee than larger firms, according to a study released by the Office of Advocacy of the U.S. Small Business Administration. Moreover, their patents outperform larger firms on a number of measurements, suggesting that small firm patents in general are more likely to be technologically important than those of larger firms.

“Small firms are the innovative driver of the American economy,” said Dr. Chad Moutray, Chief Economist for the Office of Advocacy. He added, “This report adds more weight to the evidence we already have that encouraging small firms is the best way to increase innovation, productivity, and jobs.”
says Ferguson. While Edenspace generates $1.4 million in sales annually, he estimates that since it was founded, it has spent about $10 million on its plant-related research.

There could be a big payoff. Ferguson estimates that there is a $50 to $100 million market in the U.S. for arsenic cleanups, given that 10 to 20 percent of U.S. homes have potentially troublesome levels of arsenic in their yards. But, he acknowledges, it is hard to gauge how fast Edenspace might be able to reach these potential customers. "It's largely a question of how fast people want to clean the environment," he says. "That's driven in part by government spending and regulations." Selling to individual property owners is difficult. "Many people don't know they have contamination," he notes. "It's one of these things like radon that is invisible to the consumer. And testing isn't routine."

So far, Edenspace has penetrated about 5 percent of the arsenic cleanup market, competing with rivals that mainly offer excavation as a solution. It's a slow process. "We don't aggressively go out and market at the retail level," he says. "It's very expensive, and we're not equipped to do that. We just answer the phone when people want to clean up their property."

The company sees more upside in the seeds of the plants it is developing for the biofuels industry. With the market for transportation fuels in the U.S. estimated at about $500 billion, Ferguson says, "Being able to address just a small part of that would be a big deal for us." Ultimately, the market for seeds that allow ethanol producers to process the fuel more efficiently could be as big as $7 billion annually.

Edenspace has a long way to go to get to that point. "On the biofuel side, we have zero market share," he says. Then again, he notes, "That's where every one else is. Cellulosic ethanol is not being produced commercially." The company's goal is to command about 20 percent of the market for the seeds that will make the process easier, saving energy. "Our goal is to lower the cost of cellulosic ethanol by 30 percent," he says. He considers the fuel a second-generation one, for which corn- and sugar-based ethanol are a necessary first step. Ultimately, he'd like to see the stover from both kinds of plants being turned into ethanol, along with the corn grain and sugar cane. "If we don't learn how to make fuel from crops, we're stuck in the hydrocarbon environment," he says.

If Edenspace succeeds, it could make life a little easier for motorists weary of perpetual price increases at the pumps. By shaving 10 cents a gallon off of just half of the 180 billion gallons of motor fuel used each year, Edenspace could save consumers $9 billion. "There are huge impacts from relatively small cost savings," Ferguson notes.

**METABOLIX**

Metabolix, a small bioscience company in Massachusetts, is working to make "natural plastics." Metabolix produces biodegradable plastic products out of corn sugar.

The company makes a product called Mirel, which reduces the use of fossil energy by more than 95 percent and provides a 200 percent reduction in greenhouse gases compared to the production of conventional petroleum-based plastics.

In September 2007, Metabolix was awarded $2,000,000 by the U.S. Department of Commerce's National Institute of Standards and Technology to develop a commercially viable process for producing bio-based chemicals from renewable agricultural products. Metabolix has received exceptional recognition for its innovative technology.

Global plastics consumption is enormous, with over 350 billion pounds consumed in 2003, and forecast to grow at over 5 percent annually to reach over 500 billion pounds in 2010. This means that global plastics consumption is growing by over 15 billion pounds per year.

Metabolix bioplastics made directly from plants offer the promise of a naturally produced, cost competitive, sustainable alternative to much of petroleum based plastic. Clearly, this technology poses a challenge to the oil industry, a challenge that makes Metabolix an agent of "creative destruction."

**REDISCOVERING CREATIVE DESTRUCTION**

"Creative destruction" describes the process by which radical innovators introduce new technologies that force large established businesses to adapt or die. The phrase was coined by the late Harvard economist and conservative icon, Joseph A. Schumpeter (1883-1950).

**JOSEPH SCHUMPETER**

In Schumpeter's view, long-term economic growth is sustained by radical innovators, even as they destroy the value of established companies. An analogy in the natural world might be forest fires, which benefit the ecology of forests by clearing out debris and making room for new growth.

In today's turbulent global economy, "creative destruction" is
becoming the norm as innovation becomes the main driver of wealth. This creates the hopeful prospect of an economy that is continually becoming ever more efficient and thus ever greener.

**CREATIVE DESTRUCTION—FOR THE ENVIRONMENT**

Ecology teaches us that forest fires can be a form of creative destruction. Fires create openings in the forest canopy that allow sunlight to reach smaller plants. This stimulates ecosystem diversity. Burning also enriches the soil by depositing calcium, potassium, phosphorous, and other minerals.

In economics, creative destruction is the process by which entrepreneurs introduce innovations that force established businesses to adapt or die. The phrase was coined by Schumpeter, who believed that long-term economic growth is sustained by radical innovators, even as they destroy the value of large dominant firms.

This analogy is fitting: By mimicking nature, the economy serves it. Just as fires renew the forest, creative destruction renews the economy.

Today radical innovators working in alternative energy, water treatment, sustainable agriculture, construction, manufacturing, and transportation are beginning to offer products that promise dramatic reductions in energy consumption, pollution, and waste. These upstart clean-tech companies—mostly small entrepreneurial businesses—pose a challenge to many large, long-dominant industrial enterprises.

**CHALLENGING GLOBAL GOLIATHS**

Metabolix, the green company that is challenging the $250 billion plastics industry, sees itself as a startup David taking on a global Goliath.

“We are commercializing disruptive, transformational technology,” declares James Barber, the company’s chief executive officer. The company is moving fast. In 2006, an initial public offering raised nearly $100 million.

Investment in other clean-tech companies is soaring here and abroad. Three examples of ventures that are getting significant funding follow.

**Mascoma**, a company formed by Dartmouth College researchers, is developing ethanol—not from corn, a valuable food crop—but from materials that have limited commercial value such as wood chips, grass, and leaves. They then use microbes to create ethanol. The company has raised $30 million to help it move beyond the experimental stage.

**Southwest Windpower**, located in Flagstaff, Arizona, is the world’s largest producer of small wind generators suitable for use by households and small businesses. The company has received $13 million from venture capital investments.

**A123Systems**, a fast-growing company headquartered in Watertown, Massachusetts, produces lithium-ion batteries that are safe, can be recharged in minutes, and have long life. These high-power batteries have the potential to make plug-in hybrid vehicles practical. The company has raised more than $102 million in funding from a variety of investors.

**MOTHER OF ALL MARKETS**

Will these clean-tech companies—and others like them—penetrate the marketplace and supplant older, bigger firms they are challenging? It’s too soon to say, of course, but prospects are brightening.

According to Clean Edge, a clean-tech research firm, global clean-energy markets are poised to quadruple in the next decade, from $55.4 billion in revenues in 2006 to more than $226.5 billion by 2016.

Venture capitalist John Doerr, who invested early in Google and Amazon, recently declared, “Going green may be the largest economic opportunity of the 21st century. It is the mother of all markets.”

To that, I would add that “going green” also may be a 21st-century manifestation of creative destruction and the mother of all economic transformations.

It’s safe to assume that Schumpeter would be pleased to learn how his seminal insight has endured and evolved. He must have been an engaging fellow. As a young man, he declared his intention to become a great lover, a great horseman, and a great economist. Later in life, he claimed that he’d achieved two out of the three but declined to reveal at which endeavor he’d failed.
Given the chance it'd be fair to tell him, "No matter. Now you can claim to have been a great environmentalist as well."

**SMALL BUSINESS INNOVATION & THE FEDERAL GOVERNMENT**

How can federal public policy promote small business innovation? There are many ways but here's one tried and true model that deserves attention and support.

Under the *Small Business Innovation Research Act (SBIR)*, federal agencies that spent over $100 million on externally funded R&D in the prior year must set aside 2.5 percent of their external R&D budget in the current year for the funding of small business technology development from design to prototype to commercialization.

The following is a listing of those departments and agencies, along with a hotlink to their SBIR website:

- U.S. Department of Agriculture
- U.S. Department of Defense
- U.S. Department of Energy
- U.S. Department of Transportation
- Environmental Protection Agency
- National Institute of Standards and Technology
- National Science Foundation

SBIR isn't chicken feed: It adds up to about $2.5 billion dollars a year. CSBE proposes doubling the small business set aside to 5 percent and a Congressional mandate establishing a green technology priority for the program. Just imagine the innovative breakthroughs that would result. Better yet, look at the following example of the innovations already being made under the existing program.

Forest Concepts, a small business formed in December 1998, has developed an innovative wood-strand erosion control material it sells under the WoodStraw® brand. WoodStraw® was designed to out-perform agricultural straw by lasting longer and resisting wind and clinging to steep slopes better.

Among other uses, WoodStraw® is used for post-wildfire erosion and dust control. The product is spread easily by hand, helicopter or straw blower. Twenty-seven truckloads were used at the Castle Rock Fire site in Ketchum, ID in June 2008.

In May 2008, Forest Concepts launched a project to develop improved methods to supply woody biomass feed stocks to the bio-energy industry. This project is supported by a grant from the U.S. Department of Agriculture Small Business Innovation Research program. This is the fourth SBIR grant the company has received related to forest products. Forest Concepts is also the 2008 winner of Rain Bird Engineering Concept of the Year Award presented by the American Society of Agricultural and Biological Engineers.

Forests in the United States contain a significant amount of and underutilized small-diameter wood. These overstocked stands not only increase the risk of insect, disease, fire, and drought damage, but also are costly to remove. Finding economical and marketable uses for small-diameter wood alleviates these problems while improving watershed health and providing economic opportunities for local communities to help offset forest management costs.
PHYSICIAN, HEAL THYSELF

The small business engine of the economy is marvelously creative and productive, as we have seen. Its tremendous power has been sufficient to restore the health of the economy. But what about the operations of small businesses themselves? Have they cleaned up their act? How green is the small business half of the economy?

Here, the answer is a mixed bag; but many hopeful signs may be detected, even in today's economic maelstrom. Let's explore this, starting with energy efficiency.

MAKING SMALL BUSINESSES ENERGY EFFICIENT

PUTTING FIRST THINGS FIRST

Increased efficiency is not only a big part of the answer to our energy and environmental problems; it is the one we should pursue first.

Joe Romm, a Senior Fellow at the Center for American Progress and former Assistant Secretary of the U.S. Department of Energy, describes energy efficiency as by far the biggest resource we have to draw on. It is also, he says, the fastest to deploy and the cheapest. "Energy efficiency is far cheaper than the current cost of unsustainable energy," Romm states, "so cheap that it helps pay for the other solutions."

What Romm says goes double for small business.

America's 27 million small firms – half of the nation's economy – consume an estimated one-half of all energy used for commercial and industrial purposes. Here's how it breaks out.

- Commercial Buildings Energy Consumption (CBECS) data reveals that commercial small businesses spend $60 billion a year on energy.
- Manufacturing Energy Consumption Survey (MECS) data reveals that a total of $104 billion is spent on energy each year by for industrial purposes. According to the National Association of Manufacturers, 37 percent of all manufacturing is now done by small businesses. So the small business portion of this expense is $38.5 billion.

The combined commercial and industrial use of energy by small businesses is estimated to cost $98.5 billion annually.

The bad news is that many small businesses waste much of the energy they purchase through needless inefficiency. The good news is that small business energy efficiency pays for itself through reduced utility bills.

FASTEST TO DEPLOY

Energy efficiency for small businesses is not rocket science. As the case studies presented in this report show, energy efficiency for small businesses involves doing the same simple things over and over again in millions and millions of workplaces.

PROPER MAINTENANCE OF EXISTING EQUIPMENT

Small business owners can start by getting their cooling and heating systems tuned-up regularly. Some simple steps – identifying duct leaks, checking airflow, cleaning coils and changing filters – work wonders, reducing energy use by up to 40 percent. That's huge when you consider that nearly $142 billion was spent nationally in 2005 on space heating and cooling for residential and commercial buildings.

Studies conducted by the Lawrence Berkeley Lab show small commercial buildings have duct leaks twice that of residential buildings. Identifying and repairing these problems is the most cost effective way of dealing with energy crisis.

Recently Buildings.com reaffirmed the effectiveness of proper maintenance. The site, aimed at professionals involved in managing buildings and facilities, says that preventative HVAC maintenance is essential for avoiding the costly, premature failure of important equipment.

Here's an example of a small business that is capitalizing on this need by selling, installing and servicing energy efficient equipment.

TAG Mechanical Systems, Inc., a small heating, cooling, and indoor air quality service company, strives to educate consumers about the benefits of good energy management. The firm sponsored TAG You're It . . . Let's Talk Green on radio station WFBL in Syracuse, NY, every other Saturday. The program addressed such topics as:
Giving Your Business an Energy Makeover
Lower Your Heating & Cooling Bills with Replacement Windows
How Electronic Air Cleaners Work

Recently, TAG installed energy efficient heating, ventilating, air conditioning and refrigeration (HVACR) systems in 845 homes as part of a military housing privatization initiative at Ft. Drum, NY. The results have been 30 percent lower energy costs for the soldiers who live in these homes, improved indoor environments, and lower greenhouse gas emissions.

Ellis Guiles, TAG's Director of Sales & Marketing, authored LEED, Follow, or Get out of the Way, a book describing how mechanical contractors can implement green building practices in their businesses to make them more profitable.

Thousands of small firms like TAG are profiting by helping homeowners, institutions of all kinds, and other businesses to save every cent they can by conserving energy. A big added plus is that such work provides jobs for American workers that can't possibly be outsourced to China or India because the work is all local.

OTHER SIMPLE, INEXPENSIVE OPTIONS

Small businesses can switch to energy-efficient light bulbs. It may sound trivial, but in a typical commercial building, lighting devours 40 percent of the energy consumed. (Two-thirds of small firms also have outdoor lighting and huge energy savings are possible there, too.)

Another easy step is installing programmable thermostats and lighting occupancy sensors in bathrooms, offices, and storerooms. These firms can purchase Energy Star-labeled appliances, electronics, office and food service equipment, and so on.

All the technology needed is available now. There's no need to wait years for expensive R&D to produce exotic new technologies. The icing on top of the cake is that small businesses can make energy efficiency upgrades rapidly – virtually overnight – at a time when quick, sure fixes are urgently needed.

ON-BILL-FINANCING: MAKING ENERGY EFFICIENCY FOR SMALL BUSINESSES AS EASY AS FALLING OFF A LOG

If small-business owners are to realize their energy savings potential quickly, they need help. Fortunately, there's a great tool that serves just this purpose: On-Bill-Financing (OBF).

Using On-Bill-Financing, an electric utility helps its small business customers reduce their energy use though audits and upgrades, providing loans to pay for the upgrades. The cost savings from reduced energy use are used to pay back the loan, so the monthly utility bill is no higher than it was before. When the loan is paid off, the small business owner's utility bill is permanently lower.

Out of Sight, NOT Out of Mind

“The old but true cliché “out of sight, out of mind” is often the reason for neglected maintenance guidelines for your HVAC system. HVAC systems are usually installed where they aren't seen, such as in a section of the basement, a closet, on rooftops, or in mechanical rooms, making them easy to ignore. Decreased efficiency, utility overpayment, discomfort, loss of productivity, eventual premature replacement, and higher repair costs are the result.

Just because your HVAC system is out of sight, does not mean it can be neglected. Getting your HVAC system checked twice annually is just as important as changing the oil in your car every 3,000 miles!”

Source: Air Conditioning Contractors of America www.acca.org
What a great deal OBF is! It’s essentially a revolving loan fund that aids both small businesses and environmental protection. It’s not one-time money that is spent and gone; the money is paid back. What’s more, OBF is funded by public benefit funds established by the utilities, so taxpayers aren’t stuck with the bill.

The model for OBF is the Small Business Energy Advantage program offered by United Illuminating Company (UI), an independently owned and operated utility in Connecticut.

ON-BILL-FINANCING IN CALIFORNIA

In 2005, the Center for Small Business and the Environment, in partnership with our ally, Small Business California, undertook to promote wider use of OBF by becoming an official intervenor before the California Public Utilities Commission. Our intervention succeeded in getting OBF tested by Pacific Gas & Electric, Southern California Edison, and San Diego Gas & Electric.

Based on these demonstrations, California took OBF to a new level. In late 2007, the California Public Utilities Commission instructed the state’s utilities to begin offering OBF in 2009, so the program is now available on a larger scale.

ON-BILL-FINANCING – A NATIONAL OPPORTUNITY

The big question here is: can OBF be deployed nationally? Here is the answer provided by Hank Ryan, Executive Director of Small Business California and national expert on OBF.

Small Businesses across the country are straining under both higher energy costs and less access to capital.

Zero-percent financing from utilities, called “On-Bill-Financing” (OBF), can use energy efficiency program funds to clear the “cash flow” hurdle and support comprehensive energy efficiency installations that can return precious capital away from wasted energy use back to help businesses grow. Almost no other investment can equal the return on investment that basic energy efficiency delivers through lighting, refrigeration, HVAC, motors and other energy use areas for just about any building nationwide.

Each state has a Public Utility Commission. Utilities function under the rules those regulators mandate that they follow. California and several New England states already offer OBF.

A new administration in Washington may well wish to accelerate efforts at using energy efficiency both for businesses and to help cities, counties, state and federal buildings lower energy use and costs comprehensively as one approach to help stimulate the economy, reduce carbon emissions and diminish security concerns relating to the current over dependence on foreign sources of energy.

Utilities need to address identifying and managing OBF within their billing systems in order to develop and operate these programs. IT development can represent a barrier that slows some utilities willingness to adopt OBF. Another hurdle is the perception of defaults by small businesses and the negative ramifications that entails.

This is in spite of several successful OBF programs with proven low default rates. Moreover, many states are just beginning or have yet to begin offering energy efficiency to their customers. Several state Public Utility Commissions are just learning how to manage balancing ratepayer and utility interests.

The fastest way to accelerate the ability for more small businesses across the country to get access to OBF may be to start with a national concentration on developing programs first aimed at cities, counties, and state and federal buildings. Few things are certain but recent economic events seem to guarantee an unprecedented level of fiscal stress within all public budgets.

One tourniquet applied to help stop the fiscal bleeding to help stabilize our collective tax base should be a rapid move to accelerate investments in energy efficiency. Government buildings are really no different than any other commercial structure. Our top priorities should be recovering up to 40 percent in annual energy costs with investments that require no up front capital (or budget hearings) and that offer a return of 50 to 150 percent.

Utilities can minimize risk and succeed with well designed energy efficiency programs using OBF for all taxpayer funded entities first. Once a utility has developed the IT and billing capability to deploy Institutional OBF, expanding to small business OBF programs as the next step becomes much easier.

Public policy on a national level can offer states incentives to mandate that utilities develop Institutional OBF. In return for compliance, the federal government could offer the states additional funding as a carrot.

THE FEDERAL ROLE: ENERGY STAR SMALL BUSINESS

OBF is not the only good tool that is available to help small business become more energy efficient. Fortunately, most everything small-business owners need to get started on energy efficiency can be found on the Energy Star Small Business web site.
What separates profitable small businesses from those that are in the red? In today’s economy, it may be their electric bills.

With energy costs a big concern and the nation in a recession, many entrepreneurs are looking for ways to trim this significant part of their overhead. In Southern Connecticut, they can turn to United Illuminating for help. The independently owned and operated utility provides electricity and energy services to about 323,000 residential, commercial and industrial customers in the state.

The publicly-traded utility’s Small Business Energy Advantage program helps entrepreneurs identify ways to save electricity, upgrade to more efficient equipment through a zero-percent financing program, and, as a result, lower their energy bills. “The idea is to help the customer stay in business,” says program administrator Dennis O’Connor. The program has been recognized by an award from the U.S. Environmental Protection Agency.

If a UI customer wanted to trim the $2,000 monthly electric bill for a convenience store, O’Connor would send a contractor out to do an energy audit in the first step of the process. The contractor would look at factors such as the efficiency of the store’s lighting, refrigeration and HVAC systems; how effectively the store was using the controls to operate them and the habits of employees. UI would then use the results to make recommendations, from installing add-ons to make the HVAC systems and refrigeration work more efficiently to switching to energy efficient lighting. The results can be dramatic. “A good rule of thumb,” says O’Connor, “is that we can save you 20-30 percent of your electric bill.” That would amount to a $400 to $600 monthly savings on a $2,000 bill.

The tab for an average project is between $8,000 and $12,000, but costs may range from $1,000 to $60,000, says O’Connor. To help small business owners get started right away, UI’s “Small Business Energy Advantage” uses program funds to defray the cost of the projects and offers zero-percent loans to qualified customers for the balance of the project. If, say, the upgrades at a store will cost $8,000, the Connecticut Energy Efficiency Fund (CEEF) could subsidize up to $2,800. The customer would pay the balance, through zero-percent financing spreading out the payments over 24 to 36 months, allowing the business to make an affordable payment of, say, $216 a month. The estimated monthly energy savings would be $400, so the customer’s total bill would be reduced, in spite of the investment in new state of the art technology. “Generally we are able to make it a ‘cash positive’ transaction for the customer,” says O’Connor.

Since the program started in 2000, the company has gotten installed more than 2,750 projects, providing $24 million in zero-percent loans to its customers, says O’Connor. UI reviews customers’ bill-paying history to determine if they qualify for financing. Public benefit funds cover the interest that the utility would have been charging for the loans. By UI’s calculations, the projects have saved 779 million lifetime kilowatt hours of electricity equal to more than 423,000 tons of avoided carbon dioxide, says O’Connor.

UI had provided almost $8.5 million in incentives to encourage participation in its program as of 2008. For 2009, the incentive budget is $2.1 million. This money has come from the Connecticut Energy Efficiency Fund (CEEF), which is drawn from a surcharge on the energy bills of customers across the state. UI, which generates $949 million in sales annually, has lost little money on the loans. Less than one percent of participants have defaulted, says O’Connor. “If our customers are in the habit of paying their energy bill, they’ll pay the loan back,” he says. Some of UI’s contractors offer their own financing programs to customers whose credit histories exclude them from the utility’s program, says O’Connor.

Connecticut isn’t the only state to have a program to help small businesses save energy. Though some states pay higher incentives, UI intends to keep its own in the 30- to 40 percent range. “We want the customer to buy into the idea of conservation,” O’Connor says. “If you just give it away, they will be less likely to care if there are savings achieved. We want them to really commit to the energy savings.”

With UI serving 20% of the state’s electricity customers, there are plenty of other small businesses to reach, says O’Connor. The company is currently working with local business groups and marketing students from colleges in the area to reach out to Hispanic entrepreneurs who may not have found out about the program because of the language barrier, he says. To that end, three of its contractors have hired bilingual sales people. “If you’re doing good things for some customers, what about the others who fall through the cracks?” he says. “They’re still contributing to the conservation fund and have every right to reap the benefits.”

Contact:
Dennis O’Connor: (203)499-3715
http://www.uinet.com/
ENERGY STAR SMALL BUSINESS AWARD WINNERS

ENERGY STAR Small Business Awards salute the thousands of small businesses across the nation who are working to save energy and prevent pollution. These national award winners represent excellence in energy efficiency and are great examples of financial and environmental stewardship.

2008 Winners

City Java (Orlando, FL)
To turn an older building into a highly energy-efficient, green and sustainable building, the Beumers started by addressing electricity use. Lighting was reworked so that energy-efficient compact fluorescent lights (CFLs) could be used throughout. The family looked for the ENERGY STAR in making all their appliance and equipment decisions.

Complexions Spa for Beauty and Wellness (Albany, NY)
This business followed green principles in converting a former fabric store into its new home. Complexions turned to the New York State Energy Research and Development Authority (NYSERDA) for recommendations on how to reduce energy consumption and the carbon footprint of the building.

Evelyn Hill Inc. (New York City, NY)
Has a very long history of providing visitor services at Liberty Island and is now making the Statue of Liberty a symbol of energy efficiency and security as well as of American freedom. You might say that Lady Liberty is “turning green within” to match her famous copper-patina surface, and the 2.7 million visitors who tour the National Park each year are learning about energy efficiency as well.

FXFOWLE (New York City, NY)
An architectural, planning, and interior design firm demonstrates how a small business that is a tenant in a building can achieve greater energy efficiency and cost savings, even if it takes some negotiation with the landlord.

Hand Motors (Manchester Center, VT)
Jim and John Hand pledged to make Hand Motors the first carbon neutral automobile dealership in Vermont and saved more than $36,000 in annual energy costs as they worked toward their goal.

Johnson Braund Design Group, Inc. (Seattle, WA)
This company has met its goal of a 50 percent reduction in grid consumption and has now set a new goal of reducing consumption another 50 percent over the next three years. The new plan calls for more day lighting, common area LED lighting, solar hot water heating, reducing the number of servers and converting many computer workstations to laptops.

Lambert Auto Sales, Inc. (Claremont, NH)
In one year, Lambert Auto Sales reduced its energy costs by nearly $1,200. It is saving more than 8,800 kWh of electricity. This prevents the annual emission of seven tons of carbon dioxide, which is the equivalent of CO2 emissions from the electricity use of about one typical home.

Long Island Village Realty (Syosset, NY)
“We’ve received media attention for our “Go Green” and EcoBroker status. But the best benefit is the knowledge that our efforts are helping people become more aware of the green issues and guiding them to make a difference in their energy usage habits.”

Pine Forest Camp (Greely, PA)
To get assistance with its goal of going green, Pine Forest Camp contacted the Environmental Management Assistance Program (EMAP) of the Pennsylvania Small Business Development Centers (SBDC). A site visit and location audit resulted in … recommendations for efficiency improvements in lighting, water heating, pool heating and food refrigeration.

Priority Communications (DuBois, PA)
This radio station owner is saving $11,000 a year through HVAC upgrades and $775 annually by using more efficient lighting.

GREENING SMALL BUSINESS

There are countless reasons that could be listed to make the case for the necessity of greening America’s small businesses. Here are just ten of the best reasons why greening small business makes perfect sense.

1. Small-business owners wasting energy are throwing money down the drain. This runs counter to their psychology. Thriftiness is second nature to small-business people.
2. All the technologies needed to complete the job are presently available off-the-shelf. There’s no need to spend years researching exotic and hugely expensive new technologies.
3. The job is a simple one. Basically, it consists of doing the same few things over and over again in millions and millions of workplaces. Example: installing programmable thermostats and occupancy sensors.
4. The job can be done fast. Small-business owners need energy solutions now, not years from now. Most energy efficiency upgrades for small businesses can be installed virtually overnight.
Wondering if your company’s heating system is costing you thousands of dollars in wasted fuel or if the computers you are planning to buy will help you conserve electricity? Jerry W. Lawson, national manager of small business and congregations for the U.S. Environmental Protection Agency’s Energy Star program, wants to make finding the answers quick and easy.

Years before the current energy crisis, Lawson and two colleagues at the U.S. Environmental Protection Agency created Green Lights, a voluntary program to help corporations transition to energy-efficient lighting. Its launch in 1991 was so successful that the EPA expanded it into Energy Star, which now offers businesses, congregations, and homeowners advice on how to reduce almost every aspect of their energy usage. Its Energy Star program selects products that use 25 to 50% less energy than standard models. There are now about 50 product lines included. Even home builders can earn the Energy Star label, if their buildings meet efficiency standards.

When Congress set aside a budget for a small business branch of the program in 1996, says Lawson, “I jumped at the chance to be the small business guy. Small business was half of the economy.” With input from dozens of trade and advocacy groups -- ranging from the National Small Business Association to the National Restaurant Association -- Lawson quickly realized how different the energy needs of businesses in different industries could be. The continually expanding program now offers information tailored to restaurants, auto dealerships, retail companies, and hospitality businesses. Anyone from a home-based sole proprietor to the owner of a mid-sized manufacturing firm can find a way to save. “The diversity of small businesses keeps us hopping,” Lawson says.

Those who formally join the EPA’s free Energy Star for Small Business program get access to technical support with their energy saving projects and the use of Portfolio Manager, a sophisticated software that tracks their energy use. Anticipating that small business owners might be reluctant to enter information about wasted energy on government servers subject to Freedom of Information Act requests, the EPA arranged for the software to reside on the server of a contractor who is not subject to FOIA. “We have been challenged on it and have never had a problem,” he says. “A competitor cannot get your information, and a federal employee will not see it. We only see aggregated information.”

Even entrepreneurs who don’t join the program can benefit. Entrepreneurs can use another free service to email a technical question to an expert, find information on financing upgrades to new equipment in their state, get free public relations materials to promote their efforts to go green and use other resources accessible through the program’s small business page (www.energystar.gov/smallbiz). All small businesses are eligible to compete in an annual contest for businesses that have cut their energy usage and to get a free download of “Putting Energy into Profits,” a guide to making a small firm more energy-efficient that is available in hard copy to formal program participants.

Fueling the program’s growth have been commitments from organizations such as the National Automobile Dealer’s Association and the Independent Community Bankers’ Association to encourage their members to take the Energy Star Challenge. Companies that join agree to reduce energy usage by at least 10% through the program. The EPA is now working with the banking group to develop a loan program that would help entrepreneurs finance more efficient equipment. “We’re trying to figure out a generic model that any banker could confidently offer small business customers,” he says. “We don’t want people borrowing money for things that don’t work. It’s really critical that we provide the technical guidance.”

Fortunately, says Lawson, even businesses that won’t be in a position to borrow for years can reap energy savings by taking a small step that he has been advocating since his days at Green Lights: changing their light bulbs. “It’s hard to beat the compact fluorescent bulb in terms of low cost, ease of insulation and return on investment,” he says. “They use 75% less energy than a standard incandescent bulb and can last about 10 years.” Installing motion detectors that turn off lights that aren’t in use is also an inexpensive way to reduce costs, he says. “Once they’re installed, they’re relentlessly saving you money.”

Contact:
U.S. EPA
ENERGY STAR Hotline (6202J)
1200 Pennsylvania Ave NW
Washington, DC 20460
5. Tested, profitable business models for greening small businesses exist in abundance. This report describes hundreds of examples, but this is only touching the tip of the iceberg.

6. The greening of small business can be achieved through voluntary action. Small-business owners can act on their own volition. They don’t have to work through a complex corporate bureaucracy to get a decision made.

7. Greening small businesses doesn’t depend on huge appropriations of public funds. It pays for itself through reduced energy bills.

8. Abundant supplies of cheap energy are things of the past, unlikely to return. And prices continue to rise. Naturally, this motivates small-business owners to act.

9. Greening makes the owners of small businesses more self-reliant, a strength which they value above all.

10. Many small businesses will benefit from efforts to make America more energy efficient and self-reliant. Small-business people own companies that sell, install, and service air conditioning, heating, insulation, ventilation, and lighting systems – now all available in energy efficient forms. They own companies that sell and service energy efficient office and commercial food service equipment, and consumer appliances of many kinds. They own companies that design and build efficient homes and commercial buildings.

With all this going for it, how can the greening of small businesses miss? Well, somehow it manages to do so. Greening small businesses turns out not to be a piece of cake after all. It’s anything but. Here’s why.

Most of the resistance to the greening of small businesses boils down to simple institutional inertia. Most small-business owners are already working like beavers just to keep their doors open. Typically, they lack the time, money, and information needed to upgrade their energy use.

Oftentimes, small-business owners have simply assumed that the cost of energy is something that lies beyond their control. And when a piece of equipment breaks down, small-business owners typically buy the least expensive replacement they can find.

For their part, energy experts and policy-makers – who might otherwise promote green energy strategies – are daunted by the boundless, teeming small business universe. To them, it looks chaotic. Small businesses are so decentralized, diverse, and dynamic that they can’t even be counted, let alone commanded and controlled. But decentralist strategies for greening small businesses – which is what is called for – lie beyond the ken of most central planners.

Recently, these obstacles have been diminished by the reality of soaring energy prices which has compelled many small-business owners to look at ways to cut their costs. Their attention has now been focused on energy as never before. Still, there’s the challenge of actually reaching 27 million highly-decentralized small businesses with a compelling message – and getting owners to accept, trust, and act on it.

A ROLE FOR TRADE ASSOCIATIONS

One solution is to recruit small business trade associations – their own advocates – to serve as messengers. Energy Star Small Business has pioneered a successful working model which does just that.

A ROLE FOR SMALL BUSINESS DEVELOPMENT CENTERS (SBDC)

A national network of one thousand Small Business Development Centers (SBDCs) provides free management consulting and technical assistance to more than one-half million small businesses each year. SBDCs also provide low-cost educational programs.

These centers, located in every state of the union, are supported by the U.S. Small Business Administration, the states, and their host institutions, usually colleges and universities.

Over 1.2 million businesses are assisted by SBDC programs on an annual basis. A sizeable number of them are in the dynamic start-up mode, while a majority of them are existing businesses searching for stability or planning for growth.

How can SBDCs help small-business owners to become energy efficient? The best model here is the Pennsylvania Small Business Development Center Environmental Management Assistance Program (EMAP). EMAP, based at the Wharton School of the University of Pennsylvania, is an award-winning program that has helped hundreds of small businesses become energy efficient. After observing the profile of EMAP it is clear how significant a role SBDCs really can play in helping small-business owners become more energy efficient in their day-to-day operations.
HOME-BASED BUSINESSES & VIRTUAL BUSINESSES

How many home-based businesses are there? A lot! According to the U.S. Small Business Administration (SBA), there were 27.2 million businesses in the United States in 2007; 52 percent of them were home-based.

These small-business owners too can reduce their energy bills by as much as 30 percent. There are numerous simple, no-cost or low-cost steps they can take in this direction. Owners of home-based businesses wishing to cut costs should visit the Energy Star Small Business program's home business web site.

The energy bills for the millions of U.S. home-based businesses are over $20 billion annually. If these businesses were to reduce their energy usage by 30 percent, they would save $6.1 billion on energy bills annually and reduce their greenhouse gas emissions by 38.5 million tons of CO2 annually, the equivalent of 7.5 coal-fired power plants or nearly 81.2 million barrels of oil.

MAKING SMALL BUSINESSES ENERGY INDEPENDENT

Imagine taking half of the economy off the grid! This is beginning to happen!

Small businesses probably have no better way to get reliable and affordable energy than from installing their own on-site generating equipment. These “micropower” technologies are small, modular devices that generate electric power on a relatively small scale and that are designed to produce power close to where it is actually used. Here’s an example.

The Raritan Inn, a bed and breakfast in Califon, New Jersey, is entirely self-sustaining, needing no outside electricity or heating. The Inn relies on the natural power of solar energy and geothermal heating, making the buildings super-efficient and the innkeeper’s residence a residential power plant.

The constant warmth of the earth is used to heat and air-condition the buildings. During the colder months the “water furnace” takes the 55 +/- degree temperature of the ground and converts it through a forced air system for domestic heating. In the summer the cool 55 degrees of the earth is used to drop the interior temperatures to a comfortable 76.

What’s more, a distinct affinity links micropower with small business. By definition, micropower is decentralized; so is small business. Therefore, micropower fits small business like a glove.

An added attraction: small-business owners can exercise this option on their own; they don't have to get the government or the utilities to act. Such technologies often make more economic sense for small firms than for big ones or for homeowners. Solar water heaters, for example, may work best for a cafeteria or a laundry.

The Story of One Auto Dealer Who Profited by Greening his Operations

When Pat Lobb began making plans for his new Toyota dealership, he determined to reduce energy costs as much as possible. Lobb and his team studied every aspect of the design, performed digital energy modeling, analyzed multiple systems, and examined return on investment based on conservative estimates of future energy costs compared to standard auto dealership construction.

Energy efficiency is apparent in nearly every decision. Building orientation and day lighting were among the considerations for lighting, along with using T-5 fluorescent fixtures with electronic ballasts, metal halide lighting, and Light-Emitting Diode (LED) exit signs. Increased ceiling and wall insulation was coupled with double-paned Low-E windows, insulated water heaters and pipes, and a landscaping plan for shade. HVAC equipment is all ENERGY STAR qualified and a regular service contract is in place.

Subsequently, after its first year of occupancy, Pat Lobb Toyota estimates that its energy costs will be at least 20 percent below those of a similar-sized dealership of typical construction in the same climate.

Pat Lobb Toyota is just one of 19,700 members of the National Automobile Dealers Association (NADA). If all NADA members reduced their energy consumption by just 10 percent (easy to do), they would save approximately $193 million in energy costs and eliminate more than one million tons of greenhouse gases each year.

That’s beginning to happen! Almost 800 auto dealers have pledged to do just that through the NADA Energy Stewardship Initiative, in collaboration with EPA’s Energy Star Small Business program.
The “World’s Largest Laundromat”

A laundry’s bottom line can be greatly affected by how energy efficient its water heating system is. For example, there is Tom Benson’s The “World’s Largest Laundromat” in Berwyn, Illinois, which contains 153 washers and 148 dryers.

Perched atop the hangar-sized facility in this working-class Chicago suburb is one of the largest, most cost-effective solar systems in the country, consisting of 36 10-by-4-foot panels that supply his 24-hour laundry with hot water.

Benson’s $150,000 hot water system is heralded as a prime example of how sun energy is practical, simple and costwise.

Benson converted from natural gas to solar in 2001, two years after buying the laundry. The motivation, he says unapologetically, was pure dollars and cents. His heating bills were climbing as high as $13,000 -- the equivalent of 25 percent of his total monthly revenue.

Benson calculates that his $150,000 system saves him $25,000 annually and so should pay for itself in about five more years. To boot, he expects it to remain operational for at least 20.

So Kruse, who has a knack for mechanics, began looking for options. He ended up installing solar panels on the roof. As he investigated other ways to power the ranch, he met David Calley, who was working on building wind generators in Flagstaff. “I liked what he had built,” says Kruse. “We thought we could turn it into a business.” In 1987, they teamed up to launch Southwest Windpower (windenergy.com). Their first product was the 300-watt Windseeker, a turbine made from a souped-up Ford alternator.

Flash forward to 2009. Southwest Windpower now bills itself as the world’s largest producer of small wind generators. The small company has produced nearly 110,000 generators used everywhere from homes to telecom transmitters. Its products include the Air series, the world’s best-selling small wind turbine; the Whisper series, a quiet system tailored for use alongside solar power; and Skystream 3.7, a generator designed for businesses and homes that are connected to utilities.

Kruse says sales are growing at double digit rates, as interest in wind power among businesses and consumers accelerates. “Today, we’re seeing three major things coming together: climate change issues, the scarcity of resources making the cost of energy go higher and higher, and global instability,” says Kruse. “That makes for an industry with a very, very bright future.”

The company has grown fast enough to acquire the assets of another small company, World Power Technologies in Duluth, in 2000. World Power made 900- to 3,000-watt wind generators. Southwest Windpower, which has revised its business plan around a dozen times as it has grown, has attracted about $20 million in two rounds of venture capital funding, from investors including Altira Group and Altira Technology Fund, Chevron Technology Ventures, NGP Capital Resources Company, and Rockport Capital Partners.
Even small business owners who are used to wearing many hats can find it tough to decipher the environmental regulations that apply to their companies. And it can be costly to hire consultants to decode these rules. The Environmental Management Assistance Program at Pennsylvania’s Small Business Development Centers offers them another government-funded solution in a program that could serve as an ideal model for other states. Founded at the Wharton School of the University of Pennsylvania’s Philadelphia campus in 1997, EMAP gives them free, confidential advice from experts, through a network of 18 college- and university-based SBDCs in Pennsylvania.

There are good reasons more than 3,000 business owners have flocked to the program. Laws governing air emissions and waste disposal are complex in Pennsylvania, particularly for the retail, service and manufacturing firms that make up most of the SBDCs’ clients. “Owners will come in and say: I’m not sure I’m doing this right. How do the regulations apply to my specific situation?” says program founder and director Christopher J. Lynch. Getting answers from EMAP is a big time saver for them. “They don’t have to research the issues and become an expert in these areas,” he says.

Even those who need intensive help can find it here. It’s not uncommon for small business owners to get 15-20 hours of free assistance, says Lynch. An EMAP expert typically visits each company to assess its situation and then offers advice and help with any permit applications required. Staffed by a 13-person team made up of former employees of state and local regulatory agencies and private-sector environmental, health and safety consultants, the program can usually address detailed questions, he says. But if entrepreneurs need more help and are afraid to call a regulatory agency for fear of triggering an investigation, the SBDC will make the inquiry for them. “Some fear the government is going to have caller ID,” says Lynch.

With fuel costs remaining a concern for entrepreneurs in tough economic times, the SBDC encourages all of its clients to take a proactive approach to their energy usage. About 500 companies have opted for energy audits, in which EMAP will send a team to review a company’s operations and energy bills and make written recommendations on how to streamline its costs. Sometimes, the consultants suggest upgrades to equipment selected for the U.S. EPA’s Energy Star Program. “We don’t make recommendations where there is more than a seven-year payback,” Lynch says. Pennsylvania offers grants of up to $7,500 to cover investments in energy-efficient equipment, matching 50% of the costs, he adds. Lynch expects the $1 million the state has set aside for the grants to go quickly once they become available this summer. Since 2004, EMAP clients have received more than $1 million in funding to implement 189 different projects, mostly to improve energy efficiency. By 2020, the accumulated small business cost savings from these 189 projects alone are projected to exceed $10 million. Those numbers are likely to increase in the future. “Until November 2008, never once did I get a call from an entrepreneur saying `I want to go green,’” says Lynch. Often, those who phoned were worried about compliance. “They would have a negative reaction to the word environment,” he says. Today, entrepreneurs are excited about creating more environmentally friendly businesses, because they see the potential payback in the fuel savings, he says. Their first question: “How do I start?” Energy efficiency is usually the place.

Contact:
Pennsylvania Small Business Development Center
Environmental Management Assistance Program
The Wharton School of the University of Pennsylvania
3819-33 Chestnut Street, Suite 325
Philadelphia, 19104-3238
877-ASK-EMAP
questions@askemap.org
www.askemapg.org
Besides manufacturing an earth-friendly product, Southwest Windpower runs a green operation. Its facilities are compliant with the RoHS standard, introduced in the European Union in 2006 to restrict the use of certain hazardous substances in electrical and electronic equipment. "We were RoHS compliant way before it was even of interest," says Kruse. "In the manufacturing process there are no hazardous materials used in our processes or leftovers." This makes it easy to recycle the company's products. The firm also uses reusable containers for its components, shipping the bins back to the manufacturer to be refilled, when possible.

The biggest challenge to Southwest Windpower's sales growth is zoning. "Most areas don't have a zoning standard for windturbines," Kruse notes. As localities sort out their rules regarding small engines, customers can encounter roadblocks to their purchases. As a result, the company has increasingly lobbied to change laws that restrict the use of windpower. "We go to whatever extreme is needed for our dealers to get permits," he says.

Kruse believes that by sticking with its long-term goal – driving down the cost of energy while improving the reliability of renewable technology – his firm will be able to continue to grow rapidly. "That's what's going to help the consumer out the most," he says.

The market opportunity is large. The U.S. Small Wind Turbine Industry Road Map, a study done by the American Wind Energy Association (AWEA), estimates that about 13 million American homes have the right amount of land and wind resources for a turbine. Only 6,800 Americans bought a small wind system in 2006, according to the AWEA. "We'd be very happy with about 10 percent of the domestic market," says Kruse.

To speed sales growth, Southwest Windpower has been building its network of dealers rapidly, creating what Kruse estimates are about 500 jobs. That number is likely to skyrocket, he notes, given that the business is hiring staff and getting 80 to 100 new dealers up and running each month. Plans are underway for a new training center near Flagstaff.

Once focused on winning early adopters for whom the cost of windpower wasn't an issue, Southwest Windpower is now going after cost-conscious consumers, with help from Egg, a Seattle ad agency. One major selling point at a time of skyrocketing utility costs is that the turbines can reduce home energy use by 20 to 80 percent annually.

Currently, the U.S. market is growing at 14 to 25 percent annually, according to the AWEA. If Congress passes a federal investment tax credit that covers wind, that growth rate could accelerate.

Southwest Windpower is already facing some competition. The AWEA estimated in 2007 that there are about 20 manufacturers of small wind systems based in the U.S. and 47 located elsewhere. While some of the American firms are startups, the AWEA considers about 12 to be "established."

Given that there is a limit to how many turbines his company can produce each year, Kruse says he is glad the industry is growing. "We believed in windpower for 20 years and said it is going to be become a major part of our society. Now, it's no longer alternative. It's such an exciting future we have," says Kruse.

If only 10 percent of the 6.8 million US homes with the right amount of land and wind resources were to install a wind turbine (reducing home energy use by 50 percent annually), over 5.3 million tons of carbon would be avoided annually. This is the equivalent of just over two typical coal-fired power plants.

A MARRIAGE MADE IN HEAVEN

CSBE sees small businesses as a natural – and huge – market for micropower. Simply put, it’s a marriage made in heaven. The object is to move small businesses beyond energy efficiency – where many are already headed – to energy independence. This is bound to excite small-business owners who, typically, treasure self-reliance.

How can these nuptials be arranged?

First, let's introduce the bride and groom. Small-business owners are largely unaware of this option. So CSBE is calling for a campaign to educate small-business owners on micropower generation, net-metering to optimize cost-effectiveness, power reliability, and power quality. Here's the plan CSBE has laid out:

(1) Assemble information, research data, case studies, etc., that demonstrates the availability, applicability, and affordability of micropower devices for small businesses;
When energy costs started to spike a few years back, the National Automobile Dealers Association (nada.org) knew it had to do something to help its members. The trade group's mission is to serve as a voice for the more than 19,000 new-car and truck dealers it represents in the U.S., tapping its resources to help them with initiatives they might not have the ability to tackle independently. “They are constantly concerned about reducing their overhead costs,” says Doug Greenhaus, director of environment, health and safety.

So NADA began looking into ideas to help them streamline their energy bills. In 2007, after two years of work, it unveiled a partnership with the U.S. Environmental Protection Agency's Energy Star program Known as the Energy Stewardship Initiative (nada.org/energystar), the project is designed to help dealers improve the energy-efficiency of their operations by at least 10 percent a year. To that end, it recommends steps that they can take to retrofit older facilities and build new construction to include lighting, climate controls, equipment and building design that optimize energy usage.

The initiative offers a variety of free resources to dealers who want to go green – or greener.

An online publication the EPA created in conjunction with NADA, “A Dealer Guide to Energy Star: Putting Energy into Profits,” provides a handy reference. Tools such as Energy Star's Portfolio Manager help the dealers track their energy usage. An online database helps dealers locate professionals and suppliers who share their commitment to saving energy. Another points them to information on state incentives on renewable energy.

Greenhaus says more than 700 members have signed up for the program. It hasn't hurt that NADA received a 2007 Energy Star Special Award for Excellence in Energy Efficiency. NADA also partners with USA Today on the annual Dealer Innovation Award, which recognizes those who have taken steps to save energy and conserve the Earth's resources.

As an added incentive for participation, NADA also helps its members — like three that recently won Energy Star Small Business Awards — publicize their efforts. The goal is to give them a marketing return on the money they invest. At a time when the sale of hybrid automobiles is up 38 percent in the U.S., customers like to know that the dealerships they patronize are making efforts to reduce their environmental impact. “Customers have been increasingly paying attention to things like that,” says Greenhaus. By next year, NADA aims to have a rating system in place to indicate how compliant dealerships are with Energy Star guidelines, he notes.

NADA, which was founded in 1917, has taken steps such as helping members comply with environmental regulations over the past 30 years because it's good business, says Greenhaus. "We don't get into things unless we believe there's a significant return on investment," he says. “There's a direct relationship between reducing their energy costs and their global warming footprint.”

Indeed, after getting its dealers started on creating higher performance buildings, NADA is now turning an eye to the several office buildings it owns on Capitol Hill and McLean. “We're doing the same things we've suggested it would be wise for our members to do,” he says.

NADA's 10 percent goal may seem modest, but if all dealerships in the U.S. were to reduce their energy consumption by just 10 percent, they would save approximately $193 million in energy costs and eliminate more than 1 million tons of greenhouse gases every year.

Contact:
National Automobile Dealers Association
8400 Westpark Drive
McLean, Va. 22102
703-821-7040
regulatoryaffairs@nada.org
(3) Explore how government can help, including these ideas:

- Creation of an ENERGY STAR Micropower program;
- Help small business advocacy organizations provide information, technical assistance, and facilitation so small-business owners can make informed decisions about their options for using micropower;
- Open up existing financial incentives that are specifically directed to the small business sector — SBA Loans, USDOE Loan guarantees, etc. — so that these embrace micropower.

LOWERING FUEL COSTS FOR SMALL BUSINESSES

It's no wonder that small-business owners are seriously concerned about fuel prices.

More than 37 percent of businesses have energy costs linked to vehicles, according to a 2006 NFIB National Small Business Poll. The owners use them for pick-ups and deliveries all day long and sometimes commute in them. That adds up to a lot of reliance on low-mpg light duty trucks and vans, the largest portion of the national small business fleet. A company driving a vehicle 100 miles per day six days a week typically puts 30,000 miles on it.

The struggles of small businesses during the record fuel prices of 2008 illustrate how vulnerable they are when their core profit-building activities depend on delivery and service calls. Raising prices hasn't been a practical option for most.

When utility costs increase, programs in many states help small businesses upgrade to energy-efficient lighting, refrigeration, HVAC, motors, and other equipment. Some states offer rebates, financing, or both.

Increases in the cost of operating vehicles are much harder to address. America's rolling infrastructure needs to become less dependent on oil and much more energy efficient. That progress may not come fast enough for the many small firms struggling to survive or the big companies that sell them vehicles that no longer meet their energy needs. Consider the situation of Ford, GM, and Chrysler.

After witnessing a period when fuel prices lurched from $2 to $4.50 per gallon, it is hard envision U.S. automakers regaining their competitive edge without some big changes. We can't fight back against increasing competition from China and India when domestic vehicles widely available in the small truck/van class only deliver from 12 to 20 mpg. Hybrids can add 10-15 percent in fuel economy, a minor incremental improvement.

We don't need to be stuck with this situation. Plug in hybrid technology can deliver light duty vehicles now. When used by firms that average 50 to 100 miles per day of driving, they offer 75–100 mpg.

The good news is that small businesses reap the benefits of more fuel efficient vehicles more quickly than general consumers, because of their high mileage. This helps to offset the cost. Small-business owners seem receptive. A survey by The National Small Business Association (NSBA) found that 68 percent of owners would be willing to lease or buy an alternative-service vehicle if it reduced overall costs significantly for each mile of use. Moreover, 66 percent would consider buying a hybrid vehicle because of the added tax incentives.

SMALL COMPANIES IN THE LEAD

Small startup companies, rather than the large automakers, are taking the lead in launching new electric vehicles. Here are some examples.

**AFS Trinity Power Corporation**, located in Bellevue, Washington, with its engineering center in Livermore, California, has produced two full-size, plug-in hybrid electric SUV prototypes that get 150 miles per gallon. AFS Trinity is proposing to lease or acquire a moth-balled or soon-to-be-mothballed Big Three auto plant. An example would be the former GM Saturn Vue plant at Spring Hill, Tennessee, but all of the Big Three U.S. automakers have auto plants they have closed or will be closing throughout America's industrial heartland that would be candidates for this project. The company and its auto engineering partner, Ricardo, Inc., would then retool the plant(s) so they could manufacture annually 100,000 plug-in hybrid electric vehicles there. They also propose to rehire the UAW workers that have been or will lose their jobs when such plants close. (A retooled plant will create 1,300 well paid new jobs.)

**Phoenix Motorcars**, a small start-up company based in Ontario, California, will sell its electric pickup trucks and SUVs by the end of this year. Phoenix's advanced battery-electric, zero-emission Sports Utility Truck can travel at freeway speeds while carrying four passengers and a full payload.

It can go 100 miles on a five-hour charge from a home outlet or
“The world needs more energy and power,” says Maria A. Thompson, general manager of the Government Solutions Group at A123 Systems. And since she and her husband, Levi T. Thompson, PhD, founded the group’s predecessor company, T/J Technologies Inc., with partner Mike Wixom in 1991, they’ve been helping to solve the energy crisis, one small step at a time.

Their focus is on developing new battery technologies and solutions for defense and aerospace applications, including batteries for military vehicles. The projects will benefit both hybrid and plug-in hybrid vehicles. The group has also created materials used in fuel cells and electrochemical storage devices such as ultracapacitors. “New materials can make a difference in creating products that can be game-changing,” says Maria.

The three entrepreneurs have been successful enough to capture attention throughout their industry. Their once-tiny startup T/J Technologies became a wholly owned subsidiary of A123 Systems, a developer and producer of Nanophosphate lithium ion batteries, in 2006. The business unit was absorbed into the parent company in 2007.

It’s not surprising that the smaller company was attractive to A123 Systems. It had already won contracts to develop new technologies for the Department of Energy, the U.S. Army, Air Force and Navy; NASA, the National Science Foundation, and the National Institute of Standards and Technology, Advanced Technology Program. Under Maria’s leadership, T/J Technologies had also racked up a list of prestigious grants and awards, such as Advanced Technology Program grants from the National Institute of Standards and Technology for battery and fuel cell development, the Nunn/Perry Award from the Department of Defense for ultracapacitor development with Lockheed Martin, and Small Business Innovation Research and Small Business Technology Transfer contracts and grants. “The work we’ve done for the government has given us a lot of credibility,” Maria says.

The trio behind T/J Technologies brought strong management experience to the table. Maria’s business credentials include product development experience at Steelcase and work on the marketing and business side at IBM. Levi, who used to be T/J’s chief technology officer, is an expert in the design, synthesis and characterization of catalytic and electronic materials. In addition to his work at A123 Systems, he is a professor of chemical and mechanical engineering at University of Michigan and is director of its Hydrogen Energy Technology Laboratory. Wixom, who was T/J’s chief scientist and senior vice president, is a physical chemist who has led projects to develop advanced electrode materials used in fuel cells and lithium batteries. He now serves as a division vice president at A123 Systems.

With the size of the market for hybrid vehicles increasing, A123 Systems is now poised to play an important role in powering them. “We’re interested in using science to make a difference,” says Maria.

Contact:
Advanced Research & Government Solutions Group
3850 Research Park Drive Suite A
Ann Arbor, MI 48108
Phone: (734) 213-1637
Fax: (734) 213-3758
E-mail: mthompson@a123systems.com
on a ten-minute one at a special charging station. The pickup will cost $47,500, about $10,000 more than the price of a comparable conventional pickup.

**HOW TO MOVE THIS FORWARD?**

Will small businesses actually upgrade to ultra fuel efficient vehicles? The only way to find out is to launch a demonstration project. On a national level, this would mean asking a handful of these firms to switch from 15 mpg clunkers to full-scale production plug-in hybrid electric vehicles (PHEV). These vehicles deliver from five to seven times current mpg levels and use of up to 100 miles per day is where their advantage is best. In California, the Bay Area Air Quality Management District and the northern California utility, Pacific Gas & Electric, are cooperating in an attempt to develop a fast-track demonstration effort in the coming weeks.

Logging and broadly publicizing the results from any such project would bring many more owners on board quickly. There are enough plug-in hybrid vehicles available to begin the project now. Utilities are already testing many of them, and more are showing up each week. A plug-in hybrid version of the Ford Escape is only one example.

The large auto manufacturers need to know if the nation’s 70 million small business employees and owners will buy PHEVs so they can plan effectively. Given the current economic situation, there isn’t time to wait another year or two, until these vehicles are slated to roll off the assembly line. If action is taken quickly with a high visibility effort, it will help both the buyers and manufacturers of these vehicles. It will aid our country in exactly the way needed most now.

**OTHER OPTIONS FOR SMALL BUSINESSES TO CUT TRANSPORTATION COSTS**

NuRide, a unique small business, rewards individuals for riding together, thus reducing traffic congestion, air pollution and greenhouse gas emissions.

NuRide taps into the immense unused seat capacity that resides in the billions of car trips that take place every day. It gives individuals the tools and incentives necessary to share rides.

The company currently has thousands of members in a half dozen major U.S. markets who have shared over a million rides. NuRide is free to join and free to use and is supported by sponsors who reward NuRide members for ride sharing.

So far, NuRide has signed up 41,895 members, enabled nearly 2.6 million shared rides, and prevented more than 29,000 tons of greenhouse gas emissions.

In 2003, the U.S. Department of Transportation reported that Americans took 1.1 billion trips per day and that 78 percent of these were single occupant trips. This clogs roadways, resulting in more than 16 million hours a day spent in traffic at an annual cost to the economy of $80 billion. Driving is also extremely harmful to our environment, with motor vehicles accounting for roughly 50 percent of urban air pollution and 30 percent of greenhouse gas emissions.

**AND WHAT ABOUT TELECOMMUTING?**

A good example of a telecommuting small business is PerkettPR, located (if that’s the right word) in Marshfield, Massachusetts. Founded in 1998, PerkettPR is a virtual public relations firm comprised of senior-level professionals from across the country. Here’s their story.

Much of the work that PR agencies handle is done on the telephone, the computer, the fax machine, or in clients’ offices. Perkett PR argues that it doesn’t need to pay rent and commute to an office in order to do any of that. Plus, as a virtual agency, the firm’s low overhead costs produce significant savings for its clients.

On October 30, 2008, PerkettPR was named “Best Boutique Agency to Work For” by the Holmes Report in its PR Agency Report Card. This is the second consecutive year the firm has won this award.
Telecommuting to a Greener Economy
Why giving employees the option of working remotely is more important than ever.
by Elaine Pofeldt

As a business journalist, I've often wondered why more companies don't embrace telecommuting. It is probably the single most effective option for businesses that want to go green and stay lean. With real estate costs a big fixed cost for many firms, it's one of the easiest ways to reduce office space.

Employers who can't afford to pay big raises can help workers stretch their paychecks by reducing their time on the roads. Not only does it reduce employees' gasoline, toll and auto repair costs, but it shrinks the hours of expensive childcare required before and after working hours for those with families.

That's not to mention the work-life balance it can bring. Freeing employees from spending five or ten hours a week in traffic gives them more ability to be involved parents, care for aging relatives, and volunteer in their communities, engendering company loyalty. The success of Tim Ferriss's bestseller The 4-Hour Workweek underlined how precious time has become for many in the post 9.11 era.

The telecommuting option can also be a way to reduce workers' health costs. Imagine if even a quarter of corporate employees devoted three hours a week to exercising, instead of sitting behind the steering wheels of their cars or on a bus or train to work.

Telecommuting can work just as well for small startups as for big corporations. When I worked as an editor at FORTUNE Small Business magazine, I founded a national business plan competition for university students. One winning entry came from three young partners who had never met each other during close to a year in business. They communicated by cell phone, e-mail and instant messages, from cities thousands of miles apart. They didn't think this was unusual. It was simply an efficient way to do business. They'd grown up with this technology and embraced it. Their online test-prep company is still thriving, several years later.

I've since met entrepreneurs of all ages who have adopted similar approaches, at ventures from online startups to publicity firms. None of these owners has ever had a negative thing to say about going “virtual.” All I've heard about are the benefits, such as being able to open a new outpost across the country by hiring a telecommuting employee in that city. Some of these enterprising folks have spread the word about their green approach in their publicity materials, gaining an edge in winning customers who want to work with green suppliers.

There's growing evidence to show that they have a reason to crow about their efforts.

A 2007 study commissioned by the Consumer Electronics Association estimated that the nearly 4 million telecommuters in the U.S. reduced the nation's gasoline use by about 840 million gallons and reduced carbon dioxide emissions by almost 14 million tons. One day of telecommuting saved about the same amount of energy that a household would burn in 12 hours, according to “The Energy and Greenhouse Gas Emissions Impact of Telecommuting and e-Commerce,” conducted by TIAX LLC for the CEA.

Corporations are gathering their own data on the benefits of telecommuting. At SUN Microsystems, 55% of the firm's 19,000 employees work from home or flexible offices in an award-winning workplace flexibility program the company runs. In June 2008, SUN announced the results of its Open Work Energy Measurement Project, a study of more than 100 participants. It showed that workers saved more than $1,700 per year in gasoline and auto repairs by working from home an average of 2.5 days per week. They used 64 watts of energy per hour at home, vs. 130 at a corporate office.

With commuting making up 98% of each employee's carbon footprint for work, individuals who conducted business from home offices 2.5 days a week shrank the energy they used annually for their jobs by 5,400 kilowatts per year. As a bonus, working from home 2.5 days a week saved the workers 2.5 weeks of commuting time per year. It's not surprising that the Environmental Defense Fund has recognized Sun's approach as an example of responsible stewardship of the earth.

Some careers don't lend themselves to working remotely, of course. You can't do emergency-room surgery in your spare bedroom. And some employees, particularly those who have just entered the work force, may need close supervision to learn their jobs well before they leave the world of cubicles behind.

But a growing number of traditional “desk” jobs can be done well from afar by experienced and trustworthy workers, thanks to relatively inexpensive technologies such as BlackBerries, VPN lines, digital fax services and videoconferencing.

And as everyday Americans scrutinize wasteful and irresponsible corporate practices that contributed to the economic mess we're in, I'm certain that those that fail to use this earth-friendly, cost effective strategy whenever possible will be left behind – just like the SUVs that languish on used car lots these days.
SMALL BUSINESSES ARE EVERYWHERE

Let’s take a tour of the teeming, boundless small green business universe. Green small businesses may be found everywhere. Here are some vivid examples.

SMALL BUSINESS IN THE SUBURBS

Jules Dervaes and three of his adult children live on one-fifth of an acre in Pasadena, Calif., a block away from a multilane highway. On this tiny sliver of land, they manage to be mostly self-sufficient. The family harvests 6,000 pounds and more than 350 separate varieties of fruits, vegetables and edible flowers annually. They brew the biodiesel fuel that powers the family car. Solar panels on their roof reduce energy bills to as little as $12 a month. Red wiggler worms turn the kitchen and garden waste into compost, which is then recycled back into the garden. The family generates cash for their limited expenses by selling produce to local restaurants.

Half of all Americans live in suburbs; about 150 million people. Most occupy a 1,500 to 3,000 square feet home on at least 1/4 of an acre of (potentially arable) land. Imagine this: micro-farming enables people who live in suburbs to feed themselves by growing food in their yards.

Yields can be surprisingly abundant. Several recent studies suggest that small scale, sustainable agriculture is actually more productive per unit of land than industrial farming. Indeed, some suburban micro-farmers have begun small businesses to sell the surplus they produce.

Microfarmers often employ the small plot intensive (SPIN), approach, shunning the traditional, highly mechanized cultivation of rural tracts. SPIN is a non-technical, inexpensive-to-implement farming system that makes it possible to earn significant income from land bases under an acre in size.

SMALL BUSINESS & SMALL TOWNS

Like many small towns, Greensburg, Kansas – population 1,500 – had been waning for years before a massive category 5 tornado destroyed 95 percent of its homes and businesses on May 4, 2007. All that was left were the sidewalks and the underground sewer lines.

Just days after the storm, the community came together and decided to rebuild sustainably, striving to become a model green town for the future. Ever since this landmark commitment was made, Greensburg GreenTown -- a grassroots community-based organization -- has worked side-by-side with city and county officials, business owners and local residents to incorporate sustainable principles into their rebuilding process. The organization serves as an educational resource for the community, a conduit through which donations can be distributed, and a representative to those outside the community who are interested in the Green Initiative.

Residents have been encouraged to purchase energy efficient appliances and light bulbs; consider alternative energy sources like solar panels and windmills; use local, non-toxic and recycled building materials; and use native plants that don’t require much watering to provide shade and reduce the load on storm sewers.

The town continues to be a model of green development and, a little more than two years after the tornado struck, has made notable progress in rebuilding. Status reports on their green initiative achievements are proudly posted. In the greening effort, the town’s small businesses have been right out in front:

- BTI, Inc.- Greensburg, the John Deere dealership, opened in February 2009 and anticipates accreditation as a LEED Platinum facility. The building features daylighting and high efficiency heating and cooling using waste oil. Wind turbines are being used for some power needs. The company, along with the city of Greenburg and Kansas Power Pool, has announced the development of the Greensburg Wind Farm. It will eventually include 10 turbines that will provide a total of 12.5 megawatts of power, which supporters say would be
enough to power all the town’s homes and businesses.

- Dwane Shank Motors, a General Motors Dealership, partnered with GM to build a very energy efficient steel building designed with recycled and recyclable content. It opened in November 2008.
- Dillons, a Kroger Co. related grocery, opened a showcase store in February 2009. It features optimal daylighting and a superior building envelope using the insulated concrete forms (ICF) building system and motion-activated display case lighting.
- The Greensburg State Bank completed its new highly efficient building using ICF construction in August 2008. Elements of the old building were reused and new high efficiency heating and cooling system were added. Heating and utility costs are one-third less than in its prior, same sized building.
- Fleener Furniture and Flooring was the first commercial ICF building in town, rebuilt in October 2007. High efficiency heating and cooling system and spray foam insulation in ceiling and walls were installed. The business features green products for sale to community.
- The Kiowa County United Business Center features nine store fronts on the first block of Main Street, privately funded primarily by area residents. Construction began in April 2009. The Center will be a model of an affordable, speedily-constructed green building.

Many residential, religious, municipal, and non-profit projects, designed and executed with the efficiency and sustainability as guiding principles, have been completed or are on the books. As John Picard, sustainability expert; and consultant to the City of Greensburg, Kansas puts it:

“Imagine a community for 1,500 people designed as a state of the art working model for green building and energy, hybrid design efficiency and genuine intelligent design. A community that generates revenue by producing excess energy, has superior air and water quality, and a world class infrastructure that enables and enhances the very essence of community. A community that quite simply is a better place to grow, work, live and raise families, and that shows that when humans do our very best work that we are simply amazing and in fact, a force of and for nature in our own right. That’s what Greensburg, Kansas is set to become.”

SMALL BUSINESS & FARMS

At Black River Organic Farm, Stefan Hartmann and his wife, Carmen Buechel-Hartmann, grow more than a dozen vegetables, from eggplant to winter squash. Black River Organic is a 16 acre family farm, owned and operated by several generations of the Hartmann family. The family lives and works year round on the farm.

Hartmann’s vegetables are available at several regional farmers markets, are sold wholesale to restaurants and organic produce distributors, and are distributed through a Community Supported Agriculture (CSA) program.

Black River Organic Farm uses only approved organic fertilizers and organic pesticides. The Hartmanns build their soil with natural compost and never treat their seeds, plants, or harvested produce with any synthetic herbicides.

What Is Community Supported Agriculture (CSA)?

CSA is a commitment between a farm and a community of consumers. By purchasing a share of the season’s harvest, CSA members support the farm throughout the season, and assume the costs, risks and bounty of growing food along with the farmer or grower. In return, the farm provides a healthy supply of seasonal fresh produce throughout the growing season.

This mutually supportive relationship between local growers and community members helps create an economically stable farm operation in which members are assured the highest quality produce at excellent prices. And farmers are guaranteed a reliable market for a diverse selection of crops.

CSA is important because it keeps food dollars in the local community and contributes to the development and maintenance of regional food systems. With a “guaranteed market” for their produce, farmers can invest their time in doing the best job they can producing food rather than marketing their products.

To learn more about CSA, visit:

Alternative Farming Systems Information Center
The Biodynamic Farming and Gardening Association
Sustainable Agriculture Research and Education
Instead of using chemical fertilizer, Stefan makes his own, using composted chicken litter, limestone, and potash. After planting, he covers the beds with wheat-straw mulch to control weeds. He never grows tomatoes in the same field until five years have passed; that keeps soil diseases and nematodes in check.

“When you buy organic produce, you buy the whole package,” Hartmann says. “You are buying the concept that the farming system is good for the environment. This is what we’re constantly telling consumers, and we as farmers have to constantly make sure that’s so. Organic farmers are held accountable. Conventional farmers are not.”

Until the recession hit, organic foods grew at an annual rate far ahead of the rest of the food industry. While sales have slowed somewhat, many consumers are still buying organic because they want to know how their food was raised and want to support family farms and rural communities.

The global market for organic products reached a value of $38.6 billion dollars in 2006, with the vast majority of products being consumed in North America and Europe, according to Organic Monitor. This constitutes a growth of five billion dollars compared to the 2005 data. Healthy growth rates are expected to continue in the coming years.

Small business has long been a part of the U.S. organic agriculture industry. Years before buying organic was popular, small farms and tiny health food stores paved the way for bigger players to follow.

SMALL BUSINESS & RANCHING

The Veseth cattle ranch has been owned by the same family since it arrived in Northern Montana in 1886. Four generations of Veseths now live and work on the operation. Since 1905, the ranch has developed 156 reservoirs/pit-dams which help distribute livestock, reduce the impacts on traditional riparian areas, and enhance wildlife habitat.

The Vespaths are one of the founders of the Ranchers Stewardship Alliance, a new group of 24 ranching families who have pledged to conserve the ranching heritage, rural communities, northern prairies, and wildlife.

Working with the Nature Conservancy, Dale Veseth helped develop incentives for ranchers to provide wildlife habitat for prairie dogs and sage grouse. This program also advocates a moratorium on the conversion of native rangeland to cropland. Recently, the Nature Conservancy presented the Veseths its Conservation Leadership Award.

So why does all of this matter? The best answer comes from the Mission Statement of the Ranchers Stewardship Alliance:

“Compared to the rest of the lower U.S., the vast prairies of northern Montana have been little changed over the last millennium. Much as chronicled by Lewis and Clark 200 years ago, this immensity of grass and sky is a stronghold for pronghorn, mule deer, elk, prairie dogs, burrowing owls, ferruginous hawks, mountain plovers and a dozen more grassland bird species that are disappearing elsewhere.”

According to the National Cattlemen’s Beef Association, greenhouse gas emissions from agriculture decreased more than 4 percent from 2001 to 2006.

SMALL BUSINESS & WILDERNESS

Kent John, owner of the Great Alaska Adventure Lodge, regularly sees the impacts of climate change while serving as a guide on the Kenai River. He worries about its effects on his business. “I make my living off wildlife, so protecting wildlife and the environment is intrinsically valuable to me,” John says. “But more than that, I grew up around wildlife and I want to be able to pass it on to the next generation.”

John is President of the Alaska Wilderness Recreation and Tourism Association (AWRTA), which represents scores of nature-based tourism businesses in the state. Because these businesses provide direct benefits to the local economy and local inhabitants, they build local support for preservation of wild areas and wildlife habitat.

AWRTA promotes environmentally sustainable economic growth while minimizing visitor impacts on wild lands, wildlife, Native cultures, and local communities. For example, to minimize impacts, Great Alaska Adventure travel is designed for small groups.

Tourism is the world’s largest industry, and ecotourism – properly done – is a way of stimulating economic development while protecting the environment. In the U.S. alone ecotourism is estimated to be a $77 billion market and the direct source of 5.9 million jobs, according to the International Ecotourism Society.

It is growing much faster than regular tourism. A substantial portion of the ecotourism industry is made up of small businesses.
**SMALL BUSINESS & OCEANS**

Oceanic Worldwide is a small business that supplies scuba diving equipment. With the help of IBM, the company recently consolidated its IT environment to improve efficiency and reduce the energy costs associated with running the technology.

"The nature of our business gives us a first-hand look at the impact of society on the environment," says Paul Elsinga, chief financial officer for Oceanic. "So the fact that we could make changes in our IT environment that reduced costs, while also doing something good for the environment was very important to us."

In celebration of the International Year of the Reef 2008, Reef Check hosted the photo contest "What Do Reefs Mean to You?" Sponsored by Oceanic, the goal was to raise awareness about the value and plight of coral and rocky reefs worldwide, and to encourage people to take action to help conserve reefs and associated ecosystems.

Why should the world care about coral reefs? Well consider that:

- 350 million people rely on coral reefs for their food and survival
- They are a cornucopia of diversity - the "rainforests of the sea"
- They are a global health indicator, the 'canary in the coal mine' for global warming
- They protect coastlines and cities from storm waves
- Tourism, the largest global industry, relies heavily on coral reefs to create white coral sand beaches and islands

**SMALL BUSINESS & THE PLANET**

At 3TIER, a group of meteorologists, hydrologists, and oceanographers, working on supercomputers, are “remapping the world.” Their objective is to map the world for wind and solar resources, country by country. Every quarter through 2010, 3TIER will release a series of resource maps for a particular region of the world.

3TIER predicts weather and climate impacts on renewable energy generation so its clients – renewable energy project operators, developers, financiers, marketers – can make informed decisions regarding investments in renewable energy.

3TIER’s founder and CEO, Kenneth Westrick, started the company in his bedroom seven years ago. Today, 3Tier has 60 employees, of which 70 percent have advanced degrees and 25 percent are PhDs.

3TIER provides instant wind speed information on the web and fast, cost-effective initial assessment of wind resources anywhere in the world. 3TIER provides instant solar irradiance information on the web, and fast, cost-effective assessment of solar resources anywhere in the continental U.S., based on the newest, most advanced national resource maps.

Hydro power is the workhorse of renewable energy, currently providing more than ten percent of the electricity generated in the world. The issues with hydropower are different — and often more complex — than with wind and solar energy. While all three depend on the weather for their fuel source, hydropower generation has the advantage that the fuel (water) can typically be stored in reservoirs. However, the water in these reservoirs is often used for competing purposes beyond energy generation, including irrigation, flood control, transportation, and consumption. Therefore, owners and operators of hydropower projects have to evaluate decisions within the conflicting objectives of power generation, safety, water quality and habitat.

More than 90 percent of the renewable energies used for electricity generation are weather-driven; in other words, they are completely dependent on the weather/climate system for their fuel. So while these sources of renewable energy have the capability to liberate us from our dependence on fossil fuels, they introduce another complicating dependency: the weather. This dependency affects all aspects of weather-driven renewable energy projects: from proper placement to ongoing operation and integration.

A picture is worth a thousand words. When financier T. Boone Pickens saw the 3TIER map showing the massive amount of wind power available in the U.S., the sight of it contributed to his decision to invest $2 billion in renewable energy.

**SMALL BUSINESS & OUTER SPACE**

Small green businesses may even show up in outer space if Solaren, a Southern California startup, succeeds in launching the world’s first space-based solar power plant. The company’s prospects are sufficiently good that Pacific Gas & Electric Corporation (PG&E) is negotiating with it to get power from a source that’s available around the clock and year-round.
SMALL BUSINESSES ARE MAKING THE WORLD GREEN

Small Wonders presents hundreds of vivid, distinct, concrete examples of small businesses successfully greening in one way or another. Why so many? What is the point?

The point is to show that small businesses are everywhere and making the world greener. The point is to show that small businesses are doing almost everything and greening almost everything. This boundless pervasiveness and infinite variety is the point.

Even so, the many examples listed here do not begin to scratch the surface of the teeming small business universe. The best we can do is to provide a mere suggestion of its boundlessness.

Green small businesses are doing almost everything under the sun. Here is a list of a 101 different ways they are doing it:

1. ALTERNATIVE TRANSPORTATION

Zane's Cycles - Branford, CT
http://zanes.com/
One of the top 10 largest retail bicycle stores in the nation, Zane's is part of the Connecticut Clean Energy Fund (CCEF) On-Site Renewable Distributed Generation Program. It recently installed a 22.7-kilowatt solar PV system on the rooftop of its building.

Phoenix Motorcars, Inc. - Ontario, CA
http://www.phoenixmotorcars.com/
Specializing in all-electric vehicles, this company plans to begin selling its zero-emission electric truck and SUV by 2010. The freeway-speed Phoenix SUT and SUV use a non-toxic battery pack that cuts down on noise and air pollution.

2. ARCHITECTS

Barley & Pfeiffer Architects - Austin, TX
http://www.barleypfeiffer.com/
Founded two decades ago, this company has been nationally recognized for “mainstreaming” the concept of green building into the North American home building industry. It has made a commitment to use energy-efficient & environmentally-responsive architectural design to meet clients’ needs.

FXFOWLE - New York, NY
http://www.fxfowle.com/
This 30-year-old architectural, planning, and interior design firm has won an ENERGY STAR Award from the U.S. EPA for reducing its energy and electrical usage through efforts such as upgrading its HVAC system and switching to compact fluorescent light fixtures. “As a sustainable design firm, it is important that our workplace communicate our philosophy and commitment to the environment to our employees and our clients,” says Bruce Fowle, FAIA, LEED, senior partner.

3. AUTO DEALERS

Hand Motors - Manchester Center, VT
http://www.handmotors.com/
Jim and John Hand pledged to make Hand Motors the first carbon neutral automobile dealership in Vermont and saved more than $36,000 in annual energy costs as they worked toward their goal. As a result of these efforts, it Hand Motors was a 2008 Small Business ENERGY STAR winner. The dealership, which also operates Manchester Auto Rentals with the same carbon neutral goal, heats its new 12,000 square-foot service shop with 100% waste motor and vegetable oil at no cost to the company. The dealership now saves more than $15,000 a year by not having to buy standard heating oil.

Lambert Auto Sales, Inc - Claremont, NH
http://www.lambertauto.com/
Another winner of the 2008 Small Business ENERGY STAR Award, Lambert Auto Sales began its energy efficiency journey in January 2007 when the National Automobile Dealers Association and ENERGY STAR announced the Energy Stewardship Initiative. The program is designed to assist auto dealers in reducing energy costs by encouraging them to take the ENERGY STAR Challenge and reduce energy consumption by at least 10%.

4. AUTO RENTALS

Bio-Beetle - Kahului, HI
http://www.bio-beetle.com/
This is the first company in the world to offer rental cars fueled...
exclusively with biodiesel. It currently offers biodiesel rentals on the Hawaiian island of Maui.

Simply Hybrid - Beverly Hills, CA  
http://www.simplyhybrid.com/  
Southern California's first totally hybrid rental service enables eco-conscious customers to rent models ranging from the Hybrid Toyota Prius to the Hybrid Lexus RX.

5. AUTO SERVICE AND REPAIR

Luscious Garage - San Francisco, CA  
http://www.lusciousgarage.com/  
At the nation's first auto repair shop specializing in hybrids, owner and mechanic Carolyn Coquillette - who has a degree in physics - relies on solar-power. Almost every aspect of the business is green, thanks to practices that range from avoiding supplies that include volatile organic compounds to recycling its scrap metal.

6. BABY CLOTHES & BEDDING

Kate Quinn Organics - Seattle, WA  
http://www.katequinnorganics.com/  
This retailer sells baby apparel and bedding made from 100% certified organic fabrics.

Sage Creek Organics - Tarzana, CA  
http://www.sagecreekorganics.com/  
No chemicals or pesticides are used in creating the organic cotton clothing and bedding this retailer sells. All dyes are eco-friendly and no finishing agents are used on the fabric in its baby clothes.

7. BANKS

ShoreBank Pacific - Ilwaco, WA  
http://eco-bank.com/  
Committed to environmentally sustainable community development, this bank specializes in helping small businesses in fields such as alternative energy, specialty agriculture, and green building.

8. BATTERIES

EnerDel Inc. - Indianapolis, IN  
http://www.enerdel.com/  
Formed when an alternative energy company merged with one of the world's largest automotive components firms, this four-year-old enterprise is developing lithium ion battery technologies for hybrid electric vehicles. Its goal is to create lighter, smaller, and longer lasting batteries than the nickel metal hydride batteries currently being used in this market.

9. BED AND BREAKFASTS

Natural Seasons Bed & Breakfast - Weston, WV  
http://www.bbonline.com/  
This renovated, Federal-style home is part of an ecotourism boom in the state. Complete with its own organic garden, it serves as the headquarters of the West Virginia Ecotourism Association.

10. BEER AND ALE

Wolaver's Organic Ales - Middlebury, VT  
http://www.ottercreekbrewing.com/wolavers.html  
One of the nation's original certified organic breweries, Wolaver's is committed to producing beer in an ecologically sound way. Its craft ales are brewed using organic malts.

11. BUILDING SUPPLIES

Nature Neutral - Charlottesville, VA  
http://www.natureneutral.com/  
Home owners interested in using environmentally preferable products to build and renovate can find them under one roof here. Its offerings range from paints that eliminate toxic materials to bamboo flooring.

Green Way Supply - Indianapolis, IN  
http://www.greenwaysupply.net/  
Solar-powered attic fans, recycled aluminum tiles, and zero VOC paints are just a few of the many green building products this e-commerce company offers to consumers and builders.

12. BUSINESS DEVELOPMENT

Sustainable Research Group - Grand Rapids, MI  
http://www.sustainableresearchgroup.com/  
This organization of experienced industry professionals is dedicated to identifying, documenting, and improving business performance based on principles that are economically sound, environmentally healthy, and socially responsible. Clients include manufacturers, service companies, and governmental and institutional organizations that recognize the value of sustainable business practices and energy efficiency.

GreenBusiness.net - Decorah, IA  
http://www.greenbusiness.net/  
Inspired by attending a Coop America conference, founder Jason Trout decided to create this online community where owners of green ventures, angel investors, and professionals can barter services, advertise to sell a business or simply exchange ideas.
Green Spaces - Brooklyn, NY
http://www.greenspacesny.com/
With its own rooftop garden and reclaimed furniture, this shared work space brings together green entrepreneurs in a like-minded community. Its newsletter reaches 4,200 green-minded people.

13. BUSES

Fisher Coachworks - Troy, MI
http://www.fishercouchworks.com/
In 2008, Fisher Coachworks rekindled 100 years of manufacturing history with the launch of the Advanced Technology Hybrid Bus. Leveraging a successful $3.5 million dollar prototype project funded primarily by the Department of Energy, the launch vehicle is an innovative hybrid mass-transit bus featuring an improvement in fuel economy over existing hybrids.

14. CATERING

GustOrganics Restaurant & Bar - New York, NY
http://www.gustorganics.com/
This business opened in 2008 in a former Burger King location advertising as “the first and only certified organic restaurant in New York.”

Greg Christian Catering and Events - Chicago, IL
http://www.gregchristian.com/
Billing himself as Chicago’s Conscious Caterer®, Christian specializes in transforming corporate meetings and events and weddings into green gatherings.

15. CEMETERIES

Memorial Ecosystems, Inc. - Westminster, SC
http://www.memorialecosystems.com/
Ramsey Creek preserve was opened by this company in 1996 as the first “green cemetery” in the United States. The preserve was formed as a model for the funeral industry, with the objectives of protecting and restoring land and providing a less expensive and more meaningful burial option. The focus is to develop multi-functional nature preserves that are created with the cooperation and assistance of non-profit organizations. By choosing burial in the preserve, clients leave a permanent legacy for their families and their communities.

Green Burial Council - Santa Fe, NM
http://www.greenburialcouncil.org/
This group’s certification program is the “gold standard” for green burial practices and places among consumers, land trusts, park service agencies, as well the cemetery/funeral profession.

16. CLEANING PRODUCTS

EcoLogic Solutions - Brooklyn, NY
http://www.ecologicsolutions.com/
With the goal of introducing the safest, effective and cost competitive cleaning products to mass consumers, this company sells only non-toxic and non-polluting formulas.

Mrs. Meyer’s Clean Day - Minneapolis, MN
http://www.mrsmeyers.com/
A leader in household cleaning alternatives, Mrs. Meyers uses plant-derived ingredients whenever possible in its widely distributed products.

Biokleen - Vancouver, WA
http://biokleenhome.com/
Biokleen, which won an award from its city for its pollution prevention and sustainable practices, concentrates its products in order to leave the smallest footprint on the environment. As a result of using less packaging, it contributes less waste to landfills.

The Clean Environment Company - Omaha, NE
http://www.cleanenvironmentco.com/
For more than 15 years, it has manufactured and distributed a line of eco-friendly commercial cleaning products.

Pacific Sands, Inc. - Racine, WI
http://www.pacificsands.biz/
This small company has found a niche in manufacturing nontoxic products for cleaning, pet care and pool, spa and water maintenance applications.

17. CLOTHING

Birch Clothing - Minneapolis, MN
http://www.birchclothing.com/
This retail store and web marketer features organic, fair trade and sustainable clothing, accessories, gifts, jewelry and linens.

Green3 - Oshkosh, WI
http://www.green3apparel.com/
Designing and marketing women’s casual apparel made from organic fabrics, this firm has brought its own spin on sustainability to the fashion industry.

Earth Creations, Inc. - Bessemer, AL
http://www.earthcreations.net/
This company uses natural clay dyes to create a full line of organic T-shirts for men, women, and children and a complete line of women’s casual wear made using sustainable fibers.
Marchuska / cmarchuska LLC - Endicott & New York, NY
http://www.marchuska.com/
Those who have avoided buying sustainably made clothing because they view the cuts as unfashionable have an alternative in this trendy T-shirt maker.

18. COFFEE
Rogers Family Company, Inc. - San Leandro, CA
http://www.rogersfamilyco.com/
This family run firm roasts shade grown & organic coffee, some of which it grows on its own organic coffee farms.

19. CONSTRUCTION MATERIALS
Serious Materials - Sunnyvale, CA
http://www.seriousmaterials.com/
Creating traditional drywall contributes to greenhouse gases because of its heavy use of gypsum, a producer of carbon dioxide. This venture-backed company's product, EcoRock, relies on a process that uses less heat and produces less carbon, thanks to its use of an alternative material diverted from landfills.

20. COSMETICS
Hugo Naturals - Chatsworth, CA
http://www.hugonaturals.com/
Using natural products like jojoba ester, coconut oil, shea butter and botanical extracts, this small business avoids harsh additives or fillers in its products.

Complexions - Spa/Salon/Boutique - Albany, NY
http://www.complexionsspa.com/
The eco-friendly conversion of 8,500-square-foot facility earned this small business a 2008 EPA ENERGY STAR Award. Guests are encouraged to be more earth-friendly through measures such as discounts on retail products when they buy a reusable organic shopping bag. VIP parking is available for guests who drive a hybrid car, and parking spaces for bikes are available. The owners estimate saving of more than $10,000 annually with energy-efficient measures. The greenhouse gas savings are estimated at 56 tons annually, the equivalent of the CO2 emissions from the electricity use of nearly seven homes.

21. DAIRIES
Crave Brothers Dairy Farm - Waterloo, WI
http://www.cravecheese.com/
Known for award-winning, farmstead mozzarella and other fresh cheeses, the family-run firm is environmentally friendly. In 2007, it began using a computer-controlled anaerobic digestion system to convert methane generated from cow manure to electricity for its own use and to power 120 homes.

22. DATING SERVICES
Green Singles® - Pickerington, OH
http://www.greensingles.com/
A dating website that features “personal ads for progressive singles in the environmental, vegetarian, and animal rights community,” this membership network includes people from across the U.S., Canada, and other parts of the world.

23. DRY CLEANERS
Hangers Cleaners - Kansas City, KS
http://www.hangerskc.com/
Hangers uses liquid carbon dioxide as its cleaning solvent instead of harsh chemicals like perchloroethylene, employed in traditional dry cleaning.

OXXO Care Cleaners® - Hollywood, FL
http://www.oxxousa.com/
This franchise, which has stores in Florida, New Jersey and Washington, D.C., uses environmentally safe cleaning products and practices, avoiding harmful perchloroethylene.

24. EDUCATION
North American Alliance for Green Education - Prescott, AZ
http://www.naage.org/
This nonprofit consortium is comprised of educational institutions and organizations with a commitment to environmental studies programs, located in diverse bioregions.

25. EMPLOYMENT SERVICES
Green Dream Jobs - Huntington Station, NY
http://www.sustainablebusiness.com/jobs/
Operating online for 12 years, this site is one of the largest sources of job listings for earth-minded job seekers.

EnvironmentalCareer.com - Hampton, VA
http://www.environmentalcareer.com/
In today's tough job market, this site brings together leading environmental employers with qualified candidates.

26. ENERGY CONSULTANTS
3Degrees Group, Inc. - San Francisco, CA
http://www.3degreesinc.com/about/vision/
Helping other companies to achieve their sustainability goals, this small firm provides Green-e Energy Certified Renewable Energy Certificates and third-party certified Verified Emission Reductions (aka, carbon offsets).

**Bright Power, Inc.** - New York, NY

[http://www.brightpower.biz/](http://www.brightpower.biz/)

Founded in 2004 to provide consulting services and energy solutions to building owners and companies, this firm helps clients achieve their goal to use clean energy.

**27. ENERGY MANAGEMENT (SMART ENERGY)**

**EnergyHub** - Brooklyn, NY


With help from this technology start-up, consumers can reduce their home energy usage by identifying waste in their residences and controlling their appliances with a touch-screen dashboard.

**GridPoint, Inc.** - Arlington, VA


This company’s innovative smart grid platform empowers utilities to optimize electrical grid management, increase grid reliability, promote environmental stewardship and fuel the adoption of renewable energy sources.

**Greenbox Technology, Inc.** - San Bruno, CA


Households can track, understand, and manage their home energy usage and environmental footprint using this web-based solution.

**iPower Systems** - Valhalla, NY

[http://ipowerltd.com/](http://ipowerltd.com/)

Homeowners and small businesses can use this company’s batteries for emergency backup power, giving them a green alternative to a generator.

**Electronic Educational Devices** - Denver, CO

[https://www.wattsupmeters.com/](https://www.wattsupmeters.com/)

How much of an energy hog is that hair dryer – or washing machine? Watts Up "plug load" meters have been answering questions like this for consumers since this company was founded in 1997. These handy devices measure the electrical usage of whatever is plugged into them. And at less than $100, they are affordable to many homeowners.

**28. ENVIRONMENTAL MAPPING**

**3TIER** - Seattle, WA

[http://www.3tiergroup.com/](http://www.3tiergroup.com/)

Meteorologists, hydrologists, and oceanographers at this firm are working on supercomputers to map the world for wind and solar resources, country by country.

**29. ENVIRONMENTAL PLANNING**

**Rana Creek** - Carmel Valley, CA


A landscape-architecture and ecological-design firm with 32 employees, Rana Creek traded in four of its 10-autos for hybrids.

**The Green Team** - Tulsa, OK


Founded by architects Dru Meadows and Charles Bell, this environmental consulting firm has won awards from the U.S. Green Building Council and other groups for its work in helping clients create buildings that incorporate sustainable design. Among its high-profile clients: the American Lung Association, the City of Los Angeles Fire Department, and Walmart. It received a $1.75 million contract through the U.S. EPA’s Small Business Innovation Research program in early 2008 to develop an authentication and registry service for green products and services used by the building industry.

**30. ETHANOL**

**Mascoma** - Boston, MA


While competitors turn to corn and other feed stocks for ethanol production, this three-year-old firm is exploring non-food sources, such as wood, straws, fuel energy crops, paper pulp and other agricultural waste. It has caught the eye of equity investors, who have pumped $100 million into its research and development efforts. The government is also paying attention. Mascoma has secured $100 million in state and federal grants, among them $26 million from the U.S. Department of Energy.

**31. FARMS**

**Black River Organic Farm** - Ivanhoe, NC


Consumers can purchase a share of the season's harvest at this farm, which distributes its vegetables through a Community Supported Agriculture (CSA) program.

**Applegate Farms** - Bridgewater, NJ


This company sells meat raised humanely, without antibiotics or hormones.
Somerton Tanks Farm - Philadelphia, PA
http://www.somertontanksfarm.org/
Based on a half-acre in Philadelphia, this demonstration farm has promoted the possibility of raising produce in the heart of urban areas. By pushing the physical and philosophical boundaries of agriculture, it is achieving a level of productivity and financial success that many thought impossible.

Wilderness Family Naturals - Silver Bay, MN
http://www.wildernessfamilynaturals.com/
Located on the Shore of Lake Superior in an area that is home to beaver, bison and bald eagles, this family run business has grown to employ 30 people. It supplies the area with a wide array of natural, raw, and organic foods.

32. FAST FOOD
The Grille Zone - Boston, MA
Known for its burgers and French fries, this fast food outlet has also built a reputation for environmentally sustainable practices. It is certified by the Green Restaurant Association.

33. FINANCE
Lee Capital Advisors, LLC - Newtown, CT
http://leecapllc.com/
This firm specializes in financial solutions for renewable energy and conservation, such as an energy optimization loan program. With support from the Connecticut Clean Energy Fund (CCEF) On-Site Renewable Distributed Generation Program, it recently installed a 17.6-kilowatt solar PV system on the rooftop of its building.

34. FLORISTS
Organic Bouquet - San Rafael, CA
http://www.organicbouquet.com/
Saying it with flowers no longer has to mean ordering a bouquet grown with pesticides. Founded in 2001 with the goal of creating a national market for organic flowers, this enterprise now offers options that meet biodynamic, sustainable, Fair Trade and other standards, thanks to a network of both large and small growers. Prices are comparable to those of other online florists.

35. FOOD
Annie's Inc. - Napa, CA
http://www.anniesinc.com/
Annie's Naturals, a leading maker of all-natural and organic salad dressings, marinades, flavored olive oils and condiments, has found a place on many supermarket shelves. The company's Annie's Homegrown brand of organic and natural pasta meals and healthy snacks has also become well-established.

36. FOREST PRODUCTS
Confluence Energy - Kremmling, CO
http://www.confluenceenergy.com/
Rotting pine killed by beetles might not seem to have much of a useful future ahead of them, except perhaps as compost. This company has come up with a process that turns them into wood pellets used as heating fuel. The trees are dried using a sawdust-powered furnace and then hammer into wood chips that are made into pellets. In June the company made its first shipments from a new state-of-the-art plant, the largest in the U.S. west of the Mississippi.

Forest Concepts LLC - Auburn, WA
http://www.forestconcepts.com/
An innovative wood-strand erosion control material made by this company outperforms agricultural straw by lasting longer, resisting wind and clinging to steep slopes better.

Green Forest Products - Green Forest, AR
http://www.greenforestproducts.com/
Creating jobs in a depressed area, this small firm recycles wood waste into garden mulches. After reinventing itself from a previous incarnation as a feed pellet manufacturer, it is seeing rapid sales growth.

37. FUEL CELLS
FuelCell Energy - Danbury, CT
http://www.fuelcellenergy.com/
The Ultra-Clean stationary fuel cell power plants created by this company generate electricity with up to twice the efficiency of conventional fossil fuel plants – and virtually no air pollution.

ReliOn, Inc. - Spokane, WA
http://www.relion-inc.com/
A world leader in making backup fuel cells, this company has developed systems for preserving telecommunications during severe storms and other emergencies.
Jadoo Power - Folsom, CA  

A leader in fuel cell technology, Jadoo provides hybrid fuel cell power for government, military and commercial applications.

Plug Power - Latham, NY  
http://www.plugpower.com/

This company's develops, manufactures, integrates and services proprietary fuel cell solutions, providing clean, reliable energy for customers throughout the world.

38. FUNERALS

The Green Funeral Site - Kent, WA  
http://www.thegreenfuneralsite.com/

Those planning green funerals can turn to this comprehensive source of information.

39. GARDENING

D'Vine Designs - Salt Lake City, UT  
http://www.gardensup.com/

To help customers maximize their gardening space, this company provides equipment such as vertical structures and suspension systems for melons. It makes some of them from recycled plastic.

40. GEOTHERMAL HEATING & COOLING

EarthHeat - Duvall, WA  
http://www.earthheat.com/

Specializing in the design, installation and promotion of geothermal heating & cooling systems, EarthHeat offers engineered systems for homes or commercial buildings.

EarthLinked Technologies - Lakeland, FL  
http://www.earthlinked.com/

Manufacturer of geothermal systems for heating and cooling both residential and commercial properties. The company's manufacturing and office facility is a LEED Certified Project.

Geothermal Options LLC - Fairfax, VA  
http://www.geothermaloptions.com/

Serves as a consultant on geothermal system selection and design, as well as other energy efficiency technologies in Washington, DC, Maryland, and Northern Virginia.

WaterFurnace International, Inc. - Fort Wayne, IN  
http://www.waterfurnace.com/

This company enables homeowners to reduce their energy usage through its WaterFurnace geothermal system, which draws on free, renewable energy found in a homeowner's back yard.

41. GROCERS

Oklahoma Food Cooperative - Oklahoma City, OK  
http://www.oklahomafood.coop/

Buying food that is locally grown or produced is easy for customers of this store, which specializes in merchandise from its home state. It sells about 900 products a month, from jelly to venison. The founders are spreading their know-how to other states. They have helped launch coops in Nebraska and Texas.

42. HAMBURGERS

Burgerville - Vancouver, WA  
http://www.burgerville.com/

Founded in the 1960s, this privately owned fast-food chain has grown to 39 restaurants in Washington and Oregon, making a name for itself through its commitment to sustainable practices and fresh food purchased locally. Burgerville is also known for its commitment to its employees. It provides low-cost healthcare to those who work at least 20 hours a week and is known for its commitment to providing career opportunities to people who are deaf and hard of hearing.

EVOS - Tampa, FL  
http://www.evos.com/

This franchise chain sells slow-roasted burgers from naturally raised meats, salads made with organic field greens, shakes from fresh fruit and hormone and antibiotic free milk. It has franchises in Tampa, Chapel Hill, NC, San Luis Obispo, CA, and Henderson, NV.

43. HERBS AND SPICES

Glenbrook Farms - Campbellsville, KY  
http://glenbrookfarm.com/herbs/index.htm

Offering a wide selection of non-irradiated bulk herbs, as well as bulk spices and teas, this small firm has carved out a niche in internet retailing.

44. HOMES

Sustainable Spaces Inc. - San Francisco, CA  
http://www.sustainablespaces.com/

Helping homeowners to create healthier, energy efficient homes
is the specialty of this firm, which has developed an approach to home performance contracting that treats the home as a system.

Eco Custom Homes - Atlanta, GA
http://www.ecocustomhomes.com/
On the forefront of sustainable building in Metro Atlanta, this company's focus is on the custom home market.

GreenHomeGuide - San Francisco, CA
http://www.greenhomeguide.com/
Founded in San Francisco in 2004 to help people find reliable advice on green homes, this resource now includes information for Los Angeles and New York City.

Eco Custom Builders - Decatur and Mobile, AL
http://ecocustombuilders.com/
A leader in the construction of sustainable homes, this firm makes both custom- and semi-custom designs available to its customers.

45. HOME FURNISHINGS
Vivavi - New York, NY
http://www.vivavi.com/
Offering modern style, eco-friendly furniture and home furnishings, Vivavi also enables consumers to find newly built green residences and green home professionals throughout the United States and Canada in its companion resource, Modern Green Living.

46. HOSPITALS
Providence Newberg Medical Center - Newberg, OR
http://www.providence.org/yamhill/new_medical_center/green.htm
Billing itself as the first sustainably built hospital on the West Coast, this facility offers an alternative to the energy inefficiency that plagues many other medical centers.

Let's be Frank - San Francisco, CA
http://letsbefrankdogs.com/
Selling its all-beef, grass-fed and nitrate-free franks at stadiums and in supermarkets, this company has made an inexpensive staple healthier.

48. HOTELS
Green Hotels Association - Houston, TX
http://www.greenhotels.com/
“Green” Hotels are environmentally-friendly properties whose managers are eager to institute programs that save water, save energy and reduce solid waste. Their purpose is to bring together hotels interested in environmental issues and to encourage, promote and support the “greening” of the lodging industry.

49. HOUSEHOLD APPLIANCES
Western Appliance - San Jose, CA
http://www.westernappliance.com/
Recognized with an ENERGY STAR Small Business Award in 2007 for its innovative marketing of ENERGY STAR labeled appliances, Western Appliance has made ENERGY STAR its “differentiator.” Western Appliance operates 10 stores with 64 sales professionals selling kitchen and laundry appliances, competing with “big box” retailers in California’s Bay Area.

50. HOUSE CLEANING SERVICES
Ecolistic Cleaning - Lewes, DE
http://www.ecolisticcleaning.com/
Finding a cleaning person who uses environmentally-friendly products wasn’t easy at one time. But with more consumers trying to keep toxic products out of their homes, the market has responded. This business, founded by a concerned mom, is one of a number of green cleaning services that are thriving. Serving areas of Delaware, Maryland, and Pennsylvania.

51. HVAC INSTALLATION & SERVICE
Comfort Engineered Systems, Inc. - Nolensville, TN
http://www.comfortengineered.com/
Operating since 1994, this energy-saving HVAC company offers customers access to cutting-edge technologies such as geothermal installations.

TAG Mechanical Systems, Inc. - Syracuse, NY
http://www.tagmechanical.com/
This small heating, cooling, and indoor air quality Service Company installed energy efficient HVACR systems in 845 homes as part of a military housing privatization initiative at Ft. Drum, NY. The results have been 30% lower energy costs for the soldiers who live in these homes, improved indoor environments, and lower greenhouse gas emissions.

52. HYDROPOWER
Verdant Power - New York, NY
http://www.verdantpower.com/
Emerging technology developers have worked with utility industry
veterans to construct and operate electricity generation facilities, with a specialty in hydropower.

53. INTERIOR DESIGN

Robin Wilson Design - New York, NY
http://www.robinwilsondesign.com/
A pioneer in the eco-friendly interior design sector known for a classic style with a modern edge, Wilson and her team focus on design that is sustainable, reusable, non-toxic and recyclable.

Spectrum Fine Homes - Mountain View, CA
http://www.spectrumfinehomes.com/
This design, building and remodeling firm has claimed three national awards for green remodeling.

54. JEWELRY

Brilliant Earth - San Francisco, CA
http://www.brilliantearth.com/
Couples concerned about the origins of the jewelry they wear can purchase conflict-free diamonds that are guaranteed to originate from ethical and environmentally responsible sources from this business. It donates 5% of its profits to communities harmed by the diamond industry. The company has made a nice for itself by using precious metals from renewed sources, derived from recycled jewelry or industrial products.

55. LANDSCAPE ARCHITECTS

Brown & Danos Landdesign - Baton Rouge, LA
http://www.browndanos.com/
Landscape architects Dana Nunez Brown and Chad Danos have made their concern for ecology a hallmark of their business. They have been involved in projects from green rooftops to the recovery efforts in New Orleans.

56. LAUNDRIES

World’s Largest Laundromat - Berwyn, IL
http://www.worldslargestlaundry.com/
Owner Tom Benson says has opted for solar power, an anomaly in his industry. He believes that even when gas prices increase, he will have the ability to maintain his competitive edge by giving customers lower prices.

57. LAWN CARE

NaturaLawn of America, Inc. - Frederick, MD
http://www.nl-amer.com/
This pioneering franchise chain uses organic-based/biological products and services and integrated pest management, as alternatives to chemical fertilization programs and the application of pesticides. There are currently 67 NaturaLawn® of America franchise locations providing services in 23 states to the residential and commercial markets.

58. LIGHTING

Better Bulb - Rockville, MD
http://www.betterbulb.com/
A retailer exclusively of energy efficient lighting, including LED (light emitting diode) and CCFL (cold cathode compact fluorescent) technologies and systems, both residential and commercial.

Cree, Inc. - Durham, NC
http://www.cree.com/
A manufacturer of semiconductors, Cree has found ways to enhance the value of LED solid-state lighting, power and communications products by increasing their energy performance.

LEDdynamics - Randolph, VT
http://www.leddynamics.com/
Imagine not having to change light bulbs for twenty years! That’s the promise of LED lighting technology, a specialty for this company. LED lamps utilize light-emitting diodes (LEDs) as a source of illumination rather than electrical filaments or gas. They are 80% more energy efficient than standard lighting and they last 50 to 100 times longer than standard bulb.

Newtek Energy Solutions - Red Bank, NJ
http://www.newtekenergysolutions.com/
A supplier offering an alternative to standard lighting and high energy consuming products, with primary focus on fluorescent tube replacement, LED lighting products, and meaningful energy saving devices.

59. LUBRICATING OIL

PetroTex Hydrocarbons, LLC - Cedar Hill, TX
http://www.petrotexhydrocarbons.com/
Only about 55% of the used motor oil in the U.S. is collected. Most of the recovered oil is burned as part of a fuel oil mix that contributes to air pollution. By recycling the used petrochemical into lubricating oil instead, this small company offers another, more environmentally friendly recycling alternative.

60. MATTRESSES

Savvy Rest - Charlottesville, VA
http://www.savvyrest.com/
Manufacturing organic mattresses and pillows, the company also
sells adjustable bases and beautiful hardwood platform beds by The BedWorks of Maine.

61. MEETINGS
The Green Meeting Industry Council - Hattiesburg, MS
http://www.greenmeetings.info/
Meetings and conferences don't have to generate excess trash. This organization helps the meeting planning industry improve the environmental performance of meetings and events.

62. MORTGAGES
Better World Mortgage - Portland, OR
http://betterworldmortgage.com/
With the nation's mortgage crisis still unresolved, many Americans don't have the luxury of buying a new home. But for those who do, Better World Mortgage offers a chance to do business with socially responsible brokers. The members of its network of mortgage brokers have agreed to donate 10% of their commissions to a charity of the borrower's choice.

63. MOVING VANS
MeanGreen Trucking - New York, NY
http://www.meangreentrucking.com/
Without careful planning, a move to a new home can create a tremendous amount of waste. Billing itself as the “Earth friendliest local and long distance moving company in the country,” this startup aims to offset that. It plants a tree with every move, powers its five trucks with waste vegetable oil, and operates out of a solar-powered warehouse.

64. NANOTECHNOLOGIES
NEMS/MEMS Works LLC - Columbia, MO
http://nemsmems.org/
Keshab and Shubhra Gangopadhyay, the husband and wife team who founded this nanotechnology venture, have focused their efforts on creating tiny devices useful in industries such as energy and medicine. They are working in partnership with the University of Missouri-Columbia, to bring their technologies from the lab to the marketplace.

Altair Nanotechnologies - Reno, NV
http://www.altairnano.com/
This company is a leader in making proprietary ceramic nanotechnologies that help automakers with their energy needs. It has worked with the National Institute of Occupational Safety and Health to develop safe techniques for manufacturing and handling the very tiny materials involved. It is also involved in recycling. Currently on its agenda: finding an effective way to make titanium dioxide from a waste product left after oil is extracted from sand.

65. NURSING HOMES
Duncanster, Inc. - Bloomfield, CT
http://www.duncaster.org/
Caleb Hitchcock Nursing Home and Health Center in Bloomfield, a non-profit retirement community, provides independent living, assisted living or skilled nursing home services to residents. Its residents joined with management to cut energy consumption and costs. They are saving $18,000 per year as a result of their energy saving projects.

66. PAINT
The Freshaire Choice™ - Cleveland, OH
http://www.freshairechoice.com/
This company's paint contains no volatile organic compounds (VOCs), keeping harmful pollutants out of the air.

67. PEST CONTROL
Ecotect Scientific Pest Elimination, Inc. - Sussex, NJ
http://myecotect.com/
Providing organic and earth friendly pest elimination services for both residential and commercial clients in New Jersey and New York markets, this company provides solutions to invasions by carpenter ants, ticks, wasps, and other common pests.

EnviroCare Pest Solutions - Columbus, OH
http://www.MyEnviroCare.com
Offering consumers choices of organic and natural pest-control options, this small venture aims to use the smallest possible amounts of appropriate materials in just the right places.

68. PET CARE AND SUPPLIES
Fromm Family - Mequon, WI
http://www.frommfamily.com/
Offering gourmet dog and cat food, this company, founded in 1904, uses only natural ingredients.
Bio Bag - Palm Harbor, FL  
http://www.biobagusa.com/  
BioBag Dog holds the distinction of being the first biodegradable and compostable "plastic" pooper bag in the world. This is one of the company's most popular products.

West Paw Design - Bozeman, MT  
http://www.westpawdesign.com/  
Not only has this company diverted over 165 tons of plastic bottles from landfills by creating safe and eco-friendly dog toys from recycled plastic, but it embraces green practices such as reusing boxes and enabling customers to send products back to its team for recycling.

PlanetWise Products, Inc. - Pine Bluff, AR  
http://www.planetwiseproducts.com/  
Among this company's natural and environmentally friendly pine products are cat litter and animal bedding.

Earthdog - Brentwood, TN  
http://www.earthdog.com/  
Dog-owners who are concerned about sustainability can purchase this company's leashes and collars made from hemp. This biodegradable resource does not require pesticides or herbicides, and is stronger, more absorbent, and more insulating than cotton.

Krebs Recycle - Seattle, WA  
http://www.krebsrecycle.com/  
The nylon rope used in rock climbing might not seem to be the most versatile of materials. But this small, family-owned enterprise has found a way to put both used climbing rope and scraps from manufacturers to good use, turning it into sporty dog leashes.

69. PHARMACIES

Elephant Pharm - Berkeley, San Rafael, Walnut Creek, CA  
http://www.elephantpharm.com/  
Billing itself as the country's "first green pharmacy," this four-store chain goes far beyond offering natural and organic products. It provides recycling collection to customers for products such as halogen lamps, eyeglasses and DVDs. It collects unused medicine for environmentally safe incineration and conversion to energy. It doesn't use plastic bags, uses recycled paper, and recycles virtually every material it uses. Its newest store, a model for future ones, is part of a pilot LEED program for retail stores, incorporating state-of-the-art green building practices.

70. PIZZA

Rustic Crust - Pittsfield, NH  
http://www.rusticcrust.com/  
Whenever possible, Rustic Crust uses fresh, local, and organic ingredients in its flatbread pizzas.

Galactic Pizza - Minneapolis, MN  
http://www.galacticpizza.com/  
Galactic delivers its "planet saving pizza" via all-electric vehicles. The restaurant is powered by wind-energy. Its mozzarella cheese comes from cows untreated by growth hormones. The menu features produce purchased from nearby farms. The restaurant's packaging is made mostly of recyclable or biodegradable material. Its menu is made from hemp paper, and hemp is an ingredient in several pizzas. Food waste from the restaurant is recycled at a pig farm.

71. PLASTICS

Harbec Plastics - Ontario, NY  
http://www.harbec.com/  
This tool and mold maker has taken care to ensure that virtually every aspect of its operations are environmentally sustainable, using the ISO 14000 environmental management system as its guide. Using a wind turbine and other green technologies, owner Bob Bechtold generates much of the electricity the plant uses. He collects the heat the plant generates during manufacturing, saving on heating and cooling. And he relies on a fleet of electric and biodiesel-powered vehicles.

72. PLASTIC CONTAINERS

Eco-Products - Boulder, CO  
http://www.ecoproducts.com/  
After starting out as a distributor of environmentally friendly products, this company branched out into making its own, such as compostable fast-food containers derived from corn rather than petroleum.

PlastiPure - Austin, TX  
http://www.plastipure.com/  
Companies that want to use plastic products that don't contain endocrine disruptors can turn to this eight-year-old startup as a supplier. It develops everything from baby bottles to cosmetic containers using safer formulations its scientists have developed.

73. PRINTING
Consolidated Printing - Chicago, IL
http://www.consolidatedprinting.net/
Recognized for its environmental efforts by the Governor of Illinois and the Illinois Environmental Protection Agency, this company, originally operated from the founder's basement when it launched in 1973, has eliminated toxic chemicals from all of its operations

PrintingForLess.com - Livingston, MT
http://www.printingforless.com/
Founded in an old dairy creamery in 1999, this online printer has grown to the point that it will bring in a projected $30 million in sales this year. Now the biggest private employer in Montana, it moved in 2006 into an environmentally-friendly facility that uses paper from responsibly managed forests, making this option affordable to small companies that want to go green.

74. PUBLIC RELATIONS

perkettPR - Marshfield, MA
http://www.perkettpr.com/home.htm
This woman-run, "virtual" company keeps overhead low – and cars off the road – by letting all of its employees telecommute. It has won industry recognition for its work in serving entrepreneurial clients in fields ranging from speed dating to technology.

75. RANCHES

Veseth Cattle Company - Malta, MT
http://www.ranchersstewardshipalliance.org/
Winner of an environmental stewardship award, this cattle farm is a leader in developing sustainable practices for its industry.

76. REAL ESTATE

W&M Properties - Stamford, CT
http://www.wmproperties.com/
The green real estate development has switched its fleet of more than 25 pickup trucks to hybrid Ford Escape cars. Recently, W&M completed the "green" renovation of the world headquarters of Pitney Bowes, a Fortune 500 company.

77. RESORTS

Park City Mountain Resort - Park City, UT
http://www.parkcitymountain.com/winter/
Located in the heart of Utah's ski country, this resort began offsetting all of the energy its seven ski and snowboard resorts purchase from the electric grid by investing in renewable energy credits. It is purchasing the credits from Renewable Choice Energy in Boulder, which promotes the use of wind and other renewable energy sources.

78. RESTAURANTS

Green Restaurant Association - Boston, MA
http://www.dinegreen.com/
A national non-profit organization, GRA helps all sectors of the restaurant industry, which represents 10% of the U.S. economy, to become more environmentally sustainable. It offers research, consulting, education, marketing and community organizing resources.

Founding Farmers - Washington, DC
http://www.wearefoundingfarmers.com/
This upscale casual restaurant serves farm-to-table American food in a LEED-certified building.

Java Shack - Arlington, VA
http://www.javashack.com/
When Dale Roberts was mulling over how to give his independent coffee shop a distinctive flair in a crowded and very competitive market three years ago, he decided green was the way he should go. He began with relatively small steps, such as changing his paper cups to more biodegradable versions made from corn. He switched his incandescent light bulbs to compact fluorescents. Today, the shop gets 100 percent of its energy from wind power and is recycling about 80 percent of its waste, compared with only about 20 percent before.

79. RIDESHARING

NuRide - Essex, CT
This large online community rewards members for using alternative forms of transportation such as carpooling, vanpooling, biking, walking, telecommuting, or public transit.

80. SHIPPING

uShip - Austin, TX
http://www.uship.com/
Founded in 2001, this forward thinking business helps consumers find ways to ship large items such as furniture and appliances, for a fraction of the cost of conventional shipping, by enabling them to find shippers who are already heading in a certain direction and would like to travel with full loads. In doing so, it helps shippers maximize their resources.
81. SHOES

Great Green Shoes - Boston, MA
http://greatgreenshoes.com/
Eco fashionistas can find out about the latest eco-friendly and vegan shoes from this shopping blog.

82. SHOPPING CENTERS

HealthGoods - Manchester, NH
http://www.healthgoods.com/
By providing healthy products from organic bedding to indoor gardening systems, this comprehensive online retailer has found opportunity in the green marketplace.

83. SOLAR POWER

HUVCO - Rohrersville, MD
http://www.huvco.com/
This company's fiber-optic system takes daylight to the darkest of places, illuminating interior rooms, closets, and bathrooms. Optical lenses on exterior-mounted solar panels capture sunlight, then channel it through thin, flexible, fiber-optic cables to interior rooms. Luminaires within the room recreate the feeling of sunlight. Also, the HUVCO solar powered attic fan is designed to exhaust the hot, stagnant air and moisture from your attic to the outside.

Solec - Ewing, NJ
http://www.solec.org/
A manufacturer of specialized heat reflecting and absorbing optical coatings for the solar, building, roofing and manufacturing industries.

SunEarth Inc. - Fontana, CA
http://www.sunearthinc.com/
This company, established in 1978, manufactures industry standard solar water heating collectors and systems for residential and commercial applications.

Newtek Energy Solutions - Red Bank, NJ
http://www.newtekenergysolutions.com/
A supplier offering an alternative to standard lighting and high energy consuming products, with primary focus on fluorescent tube replacement, LED lighting products, and meaningful energy saving devices.

Standard Solar, Inc. - Gaithersburg, MD
http://www.standardSolar.com/
A Mid-Atlantic region designer and installer of solar electric systems for residential, commercial, and government properties.

The company has recently completed installation of a solar electric system on its third Washington-area public school.

Nanosolar - Palo Alto, CA
http://www.nanosolar.com/
This company has developed a proprietary process for making solar cells thinner and speeding their manufacture. EDF Renewables, said to be the world's largest electric utility, invested $50 million into the 18-year-old company in a recent strategic partnership.

HelioVolt - Austin, TX
http://www.heliovolt.net/
Led by B.J. Stanbery, a 30-year veteran of the solar industry, this company has helped speed the adoption of solar energy. It makes thin film used in the industry from Copper Indium Gallium Selenide (CIGS), an alternative to expensive silicon.

groSolar - White River Junction, VT
http://grosolar.com/
Founded by a husband and wife team of engineers, Jeff and Dori Wolfe, groSolar started out with small, off-the-grid solar projects in 1998. It gradually branched out into residential and commercial solar energy installations and became a photovoltaic distributor. Today it is involved in projects such as providing solar electricity technologies to affordable housing complexes in Connecticut and Massachusetts and bringing a solar hot-water system to the Boston Red Sox’s Fenway Park. After acquiring Energy Outfitters in 2006, it became one of the largest solar distributors in North America.

Konarka - Lowell, MS
http://www.konarka.com/
Imagine window shades or awnings that produce electricity for offices and homes. Those are some of the innovations of this startup, which develops products that convert light to energy anywhere.

84. SPORTS EQUIPMENT

Oceanic Worldwide - San Leandro, CA
http://www.oceanicworldwide.com/
By consolidating its IT environment to improve efficiency and reduce the energy costs associated with running the technology, this small scuba supplier has underlined its commitment to going green. The company also works to raise awareness about the value and plight of coral and rocky reefs worldwide, and to encourage people to take action to help conserve reefs and associated ecosystems.
85. SUMMER CAMPS

Pine Forest Camps - Greely, PA
http://www.pineforestcamp.com/

The owners of this third-generation family business have learned that it is never too late to go green. Motivated to reduce high energy costs at Pine Forest's three children's summer camps, Mickey Black, the founder's grandson, turned to the Environmental Management Assistance Program (EMAP) at the Pennsylvania Small Business Development Centers. EMAP recommended a series of simple changes that Pine Forest Camps adopted, such as switching to energy-saving metal halide bulbs for outdoor lighting, replacing indoor incandescent bulbs with more efficient fluorescent ones and using a special blanket to keep pool water warm when no one is swimming. After saving $13,000 the first year, the camp is now considering a second series of recommendations from EMAP, such as opportunities to use solar- and wind-generated power.

86. TAXICABS

enviroCAB - Arlington, VA
http://www.envirotaxicab.com/index.html

An environmentally sustainable taxicab company, enviroCAB uses hybrid vehicles. It estimates that their emissions are 60% lower than those of standard cabs.

Discount Cab - Glendale, AZ
http://www.discountcab.com/

This cab company has invested in 20 Toyota Prius cabs and completed $1 million remodeling of its corporate headquarters to reduce its carbon footprint. The square footage was doubled without increasing utility bills, thanks to upgrades such as a new air conditioning system.

87. TEA

Numi Organic Tea - Oakland, CA
http://www.worldpantry.com/cgi-bin/ncommerce3/ExecMacro/numitea/home.d2w/report#b

This young organic tea maker experienced retail success quickly, earning a place on the shelves of Whole Foods.

88. TOYS

North Star Toys - Questa, NM
http://www.northstartoys.com/

Since 1979, this family business has been making quality, non-toxic wooden toys at affordable prices. It uses recycled materials whenever possible.

Maple Landmark, Inc. - Middlebury, VT
http://www.mapelandmark.com/

Creating wooden toys, games, and gifts aimed at helping children learn, this company adheres to high standards of environmental protection.

89. TRASH COMPACTORS

BigBelly Solar - Boston, MA
http://www.bigbellysolar.com/

Created as a startup by entrepreneurship students at Babson College in 2003, this manufacturer of cordless, solar-powered trash compactors now has many clients. Its compactors, which self-generate all of the electricity they use, can be found everywhere from The Alamo in San Antonio to Walden Pond.

90. TRAVEL

RezHub - Orlando, FL
http://rezhub.com/

Want to stay in a green hotel, rent a hybrid car or fly on an airline that participates in a carbon offsetting program? This site, equipped with a custom search, makes it easy for eco-conscious travelers to do so, offering a convenient online place to book environmentally-friendly options. It donates 20% of revenue from travel booked at the site to environmental organizations.

91. TRUCKS

Advanced Transit Dynamics, Inc. - South San Francisco, CA
http://www.atdynamics.com/

This promising Silicon Valley startup, founded in 2006, develops, tests, and supplies fuel-efficiency technology to trucking fleets. By improving the aerodynamics of tractor-trailers, the company says its TrailerTail product -- a patented rear-drag reduction device -- will save trucking companies fuel and money.

92. TRUCK STOPS

IdleAire - Knoxville, TN
http://www.idleaire.com/

Long haul truck drivers often idle their trucks to heat or cool their cab during the federally-required 10 hours rest period for every 11 on the road, polluting the air. IdleAire allows drivers to shut off their engines by providing heating and cooling when the truck is at rest. Truckers simply need to install a $10 window adapter for the truck. IdleAire also provides electrical outlets and communication and entertainment options for the driver.
93. VEHICLE SALVAGE

Salvage Direct - Titusville, PA
http://www.salvagedirect.com/
An online auction site, Salvage Direct makes it easier for auto insurances to sell salvage vehicles to licensed vehicle dismantlers. The company also provides salvage management services to the auto insurance industry.

94. VETERINARIANS

Veterinary Specialty & Emergency Care - Madison, WI
http://vetspecialtycare.com/
While serving its primary mission of helping animals, this facility promotes energy efficiency by leading through example. Its building is a LEED registered project.

95. WASTE MANAGEMENT

Zia Engineering & Environmental Consultants - Las Cruces, NM
http://ziaeec.com/
Zia works in association with iiná bá, a Native American-owned and managed environmental consulting firm located in Farmington, NM. The two minority-owned firms provide solid waste management technical support for ten federally recognized tribes located within the Colorado Plateau.

96. WATER

Global Water Management, LLC - Phoenix, AZ
http://www.gwresources.com/
Reclaiming and reusing residential wastewater provides water for many residential and commercial uses without making additional demands on natural aquifers. It makes communities and the desert that surrounds them more livable. The company received the 2008 Award of Merit from the WateReuse Association.

AquaPoint, Inc. - New Bedford, MA
http://www.aquapoint.com/
The custom designer of wastewater treatment systems has developed a portfolio of technologies that enable it to adapt to specific waste stream characteristics and demanding regulatory standards.

97. WATER FILTERS

New Market Naturals - Fayetteville, AR
http://www.newmarketnaturals.com/
This small company sells moderately priced drinking and shower water filters to consumers. The replaceable cartridges used in its products keep them from ending up in landfills prematurely.

98. WEDDINGS

Green Elegance Weddings - Woodinville, WA
http://www.greeneleganceweddings.com/
This online resource helps couples plan environmentally and socially responsible weddings.

99. WILDERNESS TOURISM

Great Alaska Adventure Lodge - Sterling, AK
http://www.greatalaska.com/
Promoting environmentally sustainable economic growth while minimizing visitor impacts on wild lands, this company designs adventure travel trips for small groups.

100. WINE

Sonoma Wine Company - Graton, CA
http://www.sonomawineco.com/
Named one or eight national winners of the EPA's ENERGY STAR Award for 2007, this firm is realizing nearly a quarter million dollars in annual energy savings as a result of an integrated design process coordinated with its local utility, PG&E. The firm, founded in 2003, offers custom winemaking services to the wine industry.

Willamette Valley Vineyards - Turner, OR
http://www.willamettevalleyvineyards.com/
Even the corks used by this wine maker are green. In 2007, announced that it is the first vineyard to use bottle stoppers from responsibly managed forests certified by the Rainforest Alliance to Forest Stewardship Standards. And in 2009 with cooperation of Whole Foods Markets, launched a sustainable cork recycling program, Cork ReHarvest. Those are not the company's only green efforts. It provides up to 50 gallons of free biofuel per month to employees. Its tractors and delivery vehicles also run on biofuels.

101. WIND POWER

Bluewater Wind - Hoboken, NJ
http://www.bluewaterwind.com/
This developer of offshore wind farms is part of Arcadia Windpower, the family of companies behind Montana's first onshore wind farm. Currently involved in bringing wind energy to Delaware, New Jersey, New York, and Rhode Island, this venture just signed what it describes as the first U.S. contract for the sale of offshore windpower. It has agreed to provide power from a wind farm off the coast of Rehoboth Beach in Delaware to Delmarva Power for 25 years.
GREEN AS IT GETS

Some small businesses are doing almost everything right. In fact, some green small businesses have also embraced social values and integrated them into their operations.

STRATEGIES FOR GREENING

Here are three distinct, across-the-board approaches to going green that some small businesses are pursuing. These are:

- Greening operations from top to bottom
- Promoting local production for local use
- Building green B2B relationships

GREEN FROM TOP TO BOTTOM

Here are some terrific examples of small businesses that are all green, all-the-time, inside-out and backwards.

Hill International Trucks - Washington, PA
It's not surprising that this dealership, founded in 1897 and run by the same family for four generations, won an innovation award from the National Automobile Dealer's Association and USA Today. The company built a state-of-the-art store three times larger than its previous one, while saving 77 cents per square foot on energy. It took a comprehensive approach, investing in light colored roofing to reflect solar energy, dual waste oil furnaces used in an ambient floor-heating system, fluorescent and metal halide lighting, and other efforts to keep energy usage to a minimum.

Hot Italian - Sacramento, California
Under the leadership of owner Andrea Lepore, this new pizza and panini restaurant began generating buzz months before its opening. Why? It is participating in U.S. Green Buildings Council pilot for restaurants to get LEED certification. It is expected to use solar panels to heat water for the bathrooms and dishwashers, compost many kitchen scraps, and incorporate extensive bicycle parking.

Sierra Nevada - Chico, California
This award-winning brewer began using solar power in 2007, after generating some 75 percent of its electricity using fuel cells. It practices a comprehensive earth-friendly approach that ranges from conserving water to recycling its waste. The brewery uses seven different methods of greening:

1. Fuel Cells
2. Recycling
3. Heat Recovery
4. CO2 Recovery
5. Energy Efficiency
6. Water Conservation
7. Wastewater & Byproduct Recycling

LOCAL PRODUCTION FOR LOCAL USE

E.F. Schumacher preached the virtues of local production for local use. Basically, the idea is this: since food is needed by everyone, everywhere, every day, it ought to be produced and marketed locally. This eliminates much need for packaging, storage, and transport. The principle of local production for local use is vividly illustrated by food production and marketing but it has wider applications.

The Think Local First campaign, a project of the Latino Economic Development Corporation in Washington, DC, and Maryland, promotes small businesses among consumers, stimulating the local economy. According to Think Local First, local businesses have two to four times more impact on a city's economy than those that are not homegrown because they spend more of their money locally.

The campaign produced a useful list of benefits derived from local production for local use (see the sidebar on page 51).

Economist and author Michael Shuman is a member of Think Local First. Shuman is the author of The Small-Mart Revolution: How Local Businesses are Beating the Global Competition. Schuman details dozens of specific strategies small and home-based businesses are using to successfully out-compete the world's largest companies.

Think Local First is a member of the BALLE network. The story of BALLE's founding is a fascinating story of social activism by a small-business owner, Judy Wicks.

FROM ENTREPRENEUR TO ACTIVIST

When Judy Wicks moved onto a leafy Philadelphia street in 1972, she discovered that her new neighborhood was to be torn down to make way for a mall. "How could it be that these charming brownstone...
row houses and neighborhood shops would be demolished to make way for chain stores and fast-food restaurants?” she exclaimed. “This must have been her first BALLE moment! After helping to save the block from the wrecking ball, Judy opened the White Dog Café in January 1983 as a take-out coffee and muffin shop on the first floor of her house. Over the years the business grew into additional row houses and the menu expanded until, by 1989, the White Dog had grown to a full-service restaurant seating more than 200 customers, with a menu inspired by fresh local produce from the family farms of Pennsylvania and New Jersey.

Continuing to live above the shop, Judy grew deep roots in her community, providing educational programs on progressive issues and developing a mission of service in four areas: serving customers, employees, community, and nature. In serving nature, the White Dog Café became the first business in Pennsylvania to purchase 100 percent of its electricity from wind power. It developed a recycling and compost project and installed a solar hot water system for washing all those dishes.

In 1998, after reading about the cruel treatment of factory-farmed hogs, Judy told her chef to take all the pork off the menu until she could find a humane source. A farmer who was supplying the restaurant with free-range chickens and eggs knew Amish farmers who kept pigs in a meadow, with enough space to move around and live a natural piggy life. But she didn't stop there. Next she heard about the plight of the cow, a natural herbivore that had been taken off pasture and kept in barns and feedlots. Judy found local sources for grass-fed beef and dairy products.

Gradually Judy worked her way through her menu, scouting sources, visiting farms, making introductions, until the chickens, the eggs, the beef, and the dairy products all came from humane and sustainable local sources, along with the already local organic produce she had long purchased. What she couldn't source locally – coffee, sugar, chocolate – she bought from fair-trade suppliers. She grew a nice niche for the White Dog, the only restaurant in Philadelphia with a menu based on local and fair trade, with only humanely raised meat and poultry.

And then came a major decision point: Hoard or share? Keep this as her market niche alone, or throw it open to every restaurateur in Philadelphia? She realized that if she really cared about the pigs, the environment polluted by the concentration of manure, family farmers driven out by corporate factory farms, and consumers eating unhealthy meat, then she would share her knowledge with her competitors. It wasn't enough to be one sustainable business — she wanted to work cooperatively to build a sustainable system. Judy formed a non-profit, White Dog Community Enterprises, and began contributing 20 percent of her café's profits toward its mission of building a local living economy in the Philadelphia region.

She hired the nonprofit’s first staff person, whose job it was to connect chefs with local farmers, building a regional network of farms, restaurants, and stores. At

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**Top Ten Reasons to Think Local First**

1. **Keep Money in the Neighborhood.** For every $100 spent at a locally owned business, $45 goes back into the community and our tax base. For every $100 spent at a chain store, only $14 comes back.

2. **Help the Environment.** Independent businesses make purchases requiring less transportation and are usually located in commercial corridors and in-town instead of developing on the fringe. This means less sprawl, congestion, habitat loss and pollution.

3. **Support Community Groups.** Non-profit organizations receive an average of 250% more support from local business owners than they do from non-locally owned businesses.

4. **Embrace What Makes Us Different.** Our one-of-a-kind businesses are an integral part of the distinctive character of our community. Where we shop; where we eat and hang out - all of it makes Washington DC home. That is what brought us here and will keep us here.

5. **Invest in the Community.** Local businesses are owned by people who live here, work here, and are more invested in our future.

6. **Put Your Taxes To Good Use.** Local businesses in neighborhoods need comparatively less infrastructure investment and make more efficient use of public services as compared to nationally owned stores entering the community.

7. **Get Better Service.** Local businesses often hire people who have a better understanding of the products they’re selling, and take more time to get to know their customers.

8. **Buy What You Want, Not What Someone Wants You to Buy.** A marketplace of tens of thousands of small businesses means low prices over the long-term. Small businesses choosing products based on what their customers love and need - not a national sales plan - guarantee a more diverse range of products.

9. **Create More Jobs.** Local businesses are the largest employer nationally and in Washington DC they provide the most new jobs to residents.

10. **Encourage Local Prosperity.** In an increasingly homogenized world, people are more likely to invest in or move to communities that preserve their one-of-a-kind businesses and unique attitude.

*Source: Local First DC*
the same time, Judy made a loan to a farmer to buy a refrigerated truck so he could deliver pastured pork to other restaurants. Next, she asked what else could be sourced more locally, more sustainably: Clothing? Building materials? Energy?

She began meeting with other like-minded business owners in the Philadelphia area and talking up her vision of a sustainable local economy until she had built another network, the Sustainable Business Network of Greater Philadelphia (SBN Philly), founded in 2001. Today SBN Philly has more than 400 members representing the areas of sustainable agriculture, renewable energy, green building, recycling, eco-friendly office and cleaning supplies, independent media, downtown retail, community capital, and the other building blocks that comprise a local living economy.

Judy’s work in Philadelphia led to wider involvement and membership in the Social Venture Network (SVN), a national community of company founders, investors, and social entrepreneurs. At a SVN conference, Judy met Laury Hammel, a man who also loved to start socially responsible business organizations (he founded New England Businesses for Social Responsibility in 1988 and co-founded the national organization Business for Social Responsibility in 1991). Judy and Laury realized that merging their interests in organizing businesses and building local economies could build a strong movement for grassroots economic change in North America and beyond.

BALLE began as a project of SVN, where Judy and Laury were serving on the board. After introducing the SVN Local Network Initiative to spread her work in building local economies, Judy convened a group of twenty SVN members to explore the concept at her Pocono Mountain retreat in the summer of 2001. After the SVN conference, Judy, Laury, and several business owners interested in forming local networks met on October 14, 2001, and adopted the name Business Alliance for Local Living Economies. BALLE was officially launched with Laury and Judy as founding co-chairs. Under Laury’s leadership, BALLE eventually spun off from SVN to become its own non-profit organization, and held its first national conference in Portland, Oregon, in 2003. BALLE and SVN continue as sister organizations, jointly sponsoring Social Venture Institutes.

From one small restaurant, many ideas for change have come. Judy claims that her true occupation is using good food to lure innocent customers into social activism!

For more information on Judy’s work, visit: www.judywicks.com.

BUILDING GREEN B2B RELATIONSHIPS

Business-to-business (B2B) is a term commonly used to describe electronic commerce transactions between businesses, as opposed to those between businesses and other groups, such as business and individual consumers (B2C) or business and government (B2G). With the growth in electronic communications, B2B has taken on even more importance.

It’s a good way to reach thousands of small businesses that cannot be reached economically through traditional direct sales. And, of course, B2B is a good way for small businesses to market to their small businesses. And B2B works especially well for small businesses. Here are some examples:

CertiChem - Austin, Texas
With consumers more aware than ever before about the dangers of endocrine disruptors in plastics, this company is in demand. It is an industry leader in testing plastics and other materials for their effects on hormones.

Tricycle - Dalton, Georgia
As an alternative to traditional carpet samples, this firm makes simulated versions using paper. (Digital “tufting” software gives samples a textured appearance.) According to the company, manufacturing these samples requires 95% less energy and water than traditional ones.

SiGNa Chemistry - New York City, New York
Companies in fields from pharmaceuticals to petrochemicals have access to more environmentally friendly chemicals, thanks to this company. It has found a way to transform alkali metals and their derivatives into powders that are safe to store, replacing versions that were dangerous to use and keep on hand. SiGNa Chemistry was recognized with the Presidential Green Chemistry Challenge Award this year by the U.S. EPA for its innovations.
Oakhurst Dairy got its start in a grove – or hurst – of the trees that are its namesake. So perhaps it's not surprising that the family-run business has made environmental stewardship part of its mission since Stanley T. Bennett founded it in 1921. "The cows that supply us with our product, literally eat and drink and breathe the Maine environment," says his grandson Stanley T. Bennett II, now president of the 240-employee operation. "We have a natural self interest in keeping that environment pure. It's something we can market that our competitors can't."

By putting the earth first, the profitable dairy processing and distribution company has grown to the point that it is the largest family run business of its kind in northern New England. With Wal-Mart as its biggest account, Oakhurst buys milk from about 85 independent farms in Maine to keep up with demand. In the past decade, it has expanded into New Hampshire, Vermont and Massachusetts, pushing sales to $100 million. "Our goal is to be in the $150 million sales range by 2012," says Bennett.

Oakhurst Dairy made headlines in 2007, when it became owner of the largest private fleet of its kind in New England to run on soy-based biodiesel. Ninety percent of its 130 vehicles use the clean-burning alternative fuel. Like many initial fans, Bennett is taking a hard look at this choice. Maine's frigid winters require Oakhurst to power the equipment with a mix of fuel that is 95 percent fossil-derived and 5 percent biodiesel, to keep it from coagulating, says Bennett. "It's relatively small potatoes," he says. In the summer months, the dairy has switched to a blend that is about 20 percent biodiesel, but that figure may dip this summer, because of climbing prices for the additive, he says. And he now worries that using biodiesel could hurt businesses like his in the long run. "It's had an unintended negative impact on the cost of everything that relates to our agricultural economy," he says. "It has had an effect on the cost of milk, which relates to the cost of feed." Because of these concerns, Oakhurst is looking into new technologies that would allow the conversion of the tractors and trucks in his fleets to hybrids; it has already converted its cars to hybrids. "That has more promise than some of these alternative fuels," he says.

Solar energy figures prominently in Bennett's plans. The dairy has installed 80 panels on the roofs of its Portland plant, to heat the water used to pasteurize milk and clean its milk cases. He estimates this project, at a cost of $200,000, is reducing the dairy's energy usage by 10 percent in 2008.

Oakhurst Dairy was well prepared when Wal-Mart recently began seeking regular data on the carbon footprint of its suppliers. His firm was a pilot participant in Maine governor John Baldacci's Carbon Challenge, which started about three years ago. The company's goal has been to reduce the carbon emissions from its production and distribution activities by 20 percent by 2010, from a high point of 1,700 metric tons a year in 1998.

Oakhurst has made an approximately 15 percent reduction so far in its footprint, says Bennett. "We have taken the challenge to heart and worked aggressively on it," Bennett says.

He just needs to get his cows to cooperate. "The biggest single impact of dairy on the environment is not the energy I use at the plant but methane gas, over 75 percent released from the cows," he notes. Bennett and his team have encouraged their suppliers to start using methane digesters that harvest the energy in cow manure, but none have been able to invest in the technology yet. He is also investigating feed additives designed to improve cows' digestion. "Take advantage of whatever comes along technologically, and you're bound to improve your business," he advises.

As Bennett continues to grow Oakhurst Dairy, he revises its strategic plan annually. The company has made advertising and publicity an important part of its budget, spending up to $2 million annually. Oakhurst Dairy has a lot to crow about. In the past decade it has donated more than $2 million to charitable and nonprofit organizations that help children and the environment. Its longstanding Tree Relief program has paid for the planting of 10,000 trees in public areas of Maine's cities and towns. It helped to replenish many areas devastated by ice storms about a decade ago. Bennett considers commitments like these a wise investment in the future of his company. "Doing the right thing environmentally is always the right thing for your bottom line," he says.

Contact:
Oakhurst Dairy
364 Forest Avenue
Portland, Maine 04101
207-772-7468
info@oakhurstdairy.com
The lack of political will is a constant lament of Al Gore. That lack, he declares, is the principal obstacle to the aggressive action needed to combat global warming. Where is this much to be desired but elusive political will to be found?

THE SMALL BUSINESS CONSTITUENCY

Seventy million American's either own or work for a small business. As FORTUNE Small Business magazine has observed, "It seems that almost everyone wants to own a business, from college students who are signing up for entrepreneurial courses in record numbers; to corporate refugees who have lost jobs due to downsizing by big businesses; to those over age 65, who are forming more companies every year; to recent immigrants, who in 2005 started 25 percent more companies per capita than native-born citizens."

As a constituency small business is a well-organized, wielding massive clout in Washington, DC, and in state capitals around the nation. Small-business owners make up 15 percent of registered voters; 95 percent of them are registered to vote, and 84 percent usually do, according to the National Federation of Independent Business (NFIB).

To top it off, small business is a revered social institution. In 2007, small business topped the list in a Harris Interactive Poll taken to measure how much confidence people have in different institutions. With 54 percent saying that small business inspired a great deal of trust, it was also the only institution that won majority approval. Meanwhile, only 17 percent and 16 percent of respondents, respectively, cited confidence in Wall Street and big businesses. Congress came in last, behind law firms and the press, with 10 percent.

Small business has not been politically aligned with the cause of environmental protection. Why? One reason is that the environmental benefits of small business's zeal for job creation and innovation have been obscured by an over-emphasis on governmental “command and control” approaches – approaches that raise the ire and opposition of small-business people.

If the Obama administration were to highlight small business's environmental contributions and facilitate their vigorous expansion, the political pay-off could be enormous. The stale, unproductive "economics versus environment" debate would be transformed. The basis would be laid for broad-based, bipartisan consensus. The political will that's so long eluded us might at last be found.

It's also worth noting that all small-scale technologies now flooding the market are not being produced by tree-hugging, anti-growth fanatics, or big government regulatory zealots, or closet socialists. They are coming from entrepreneurial small businesses whose owners are every bit as likely to be Republicans as Democrats.

Message: you don't have to be a liberal to be an environmentalist. There's a path here to environmental protection that's pro-small business and pro-entrepreneur that conservatives can confidently tread.

On a political note, it's worth noting that these clean tech companies and green small businesses are beginning to mature to the point where they are acquiring political clout. This is bound to change the stale "economics versus environment" debate that assumes environmental protection is bad for the economy. This is long overdue.

Any legislation ambitious enough to cut carbon emissions significantly and encourage new energy technologies will require a broad political and social consensus. Nothing this complex and expensive gets done on a party-line vote.

If a strong, new, broad-based political consensus is to be forged on behalf of environmental protection, it must include small business owners and why not?

Many small businesses will benefit from efforts to make America more energy efficient and self-reliant.

Small business people don't typically own coal mines or oil wells. They don't build nuclear power plants. But they do own companies that sell, install, and service air conditioning, heating, insulation, ventilation, and lighting systems – now all available in energy efficient forms. They own companies that sell and service energy efficient office and commercial food service equipment, and consumer appliances of many kinds. They own companies that
design and build efficient homes and commercial buildings. And so on. Thus, making American society more energy efficient and self-reliant will open up vast economic opportunities for countless small business owners.

This is why the small business provisions in the *Energy Independence and Security Act of 2007* were endorsed by the Air Conditioning Contractors of America, another CSBE ally. These provisions were also endorsed by the Independent Electrical Contractors, the National Roofing Contractors Association, and the Plumbing-Heating-Cooling Contractors Association.

On another front, there’s the renewable energy industry which consists largely of small companies devising, manufacturing, selling and installing solar equipment, solar films/screens, wind generators, renewable energy management systems and controls, and so on.

Small business creates jobs that will stay in American communities. Small businesses create jobs that can’t be outsourced to China or India because the work is local. Small-business owners, after all, can’t usually pull up stakes and move abroad if they get the urge. They are part and parcel of the communities in which they and their families and workers live. They breathe the air and drink the water just like everyone else.

**A 10 POINT PROGRAM FOR GREEN/SMALL BUSINESS COLLABORATION**

Neither green jobs advocates nor small business leaders may be consciously aware of it, but their interests strongly converge on some key points. If they were made aware of this convergence then they might jointly assert the need for:

1. **Dramatic increases in energy efficiency**
   Efficiency – doing more with less – is good for the environment. It’s good for small businesses too; it’s their lifeblood. They survive by doing more with less. For small firms, thrift is a necessity that they’ve turned into a virtue. Now, even big businesses are catching on to this. This is why so many big companies are downsizing and decentralizing their management.

2. **Expanded technological innovation**
   Green jobs advocates are hoping to spur innovation. Hurrah! This comes as welcome news to small businesses, which produce two-thirds of all innovations. Entrepreneurial small firms actually produce five times as many patents per dollar as large companies and 20 times as many as universities. Small entrepreneurial firms are the principal source of most of the new clean technologies now flooding the market.

3. **Labor-intensive economic development**
   Green jobs advocates argue that labor-intensity favors both workers and the environment. Renewable energy, for example, creates far more employment and environmental protection than centralized, capital-intensive projects.

   By the same token, labor-intensive economic development also favors small businesses, creating far more economic opportunity for them than large-scale projects.

4. **Job training**
   Workers need training in order to participate in the transition to the green economy. For example, retrofitting America will require the services of many sheet-metal workers, cement masons, plumbers, welders, carpenters, electricians, skilled machine operators, and so on. It will also take workers possessing new skills: energy auditors, solar system specialists, and wind power installers.

   Small-business owners, by and large, cannot afford to provide training for these “green collar jobs.” But they need to draw on a trained workforce in order to exploit the many opportunities inherent for them in the transition.

5. **Rapid deployment of new technologies**
   Green jobs advocates urge the accelerated use of innovative environmental technologies by reducing barriers and promoting effective solutions. They encourage the deployment of these technologies — from remote sensing innovations to those that address nuclear waste clean-up — by reducing barriers to their commercialization and effectively spreading the word about what works.

   Entrepreneurial firms are the source of most of these technologies so, reducing barriers to their commercialization will benefit many small businesses. Also, small firms are likely to manufacture, sell, install, and service these technologies.

6. **Equitable economic opportunity for women and minorities**
   Green jobs advocates are calling for a new economy that extends employment and entrepreneurial opportunity to people from disadvantaged communities. Right on! Small business has traditionally been the ladder of opportunity
for women and minorities.

America’s 10.6 million women-owned businesses employ 19.1 million people and contribute $2.46 trillion to the economy. The number of women-owned businesses continues to grow at twice the rate of all U.S. firms, and most of these are small businesses. In 2002, minorities owned 4.1 million firms that generated $694 billion in revenues and employed 4.8 million people.

7. Decentralization
Environmentalists favor distributed generation of energy because it is less harmful to the environment. For their part, small businesses probably have no better way to get reliable and affordable energy than from distributed generation. Some small companies have, indeed, started to invest in small-scale on-site generating equipment (renewable micropower), acquiring thereby a large measure of energy independence. Decentralized energy technologies fit small business like a glove. Small business can conceivably be taken off the grid through use of renewable energy micropower devices and distributed generation of energy.

8. Jobs in American communities
The green job advocates want jobs in American communities, jobs that can’t be outsourced to China or India because the work is local. Small business tends to stay local and keep jobs in the community.

9. Increased Energy and National Security
Green-collar jobs will bolster America’s energy security by lowering its dependence on foreign oil, often imported from unstable countries.

10. Bipartisan Cooperation
Democrats tend to favor environmental interests; Republicans tend to favor small business interests. A green/small business coalition could draw on support from both parties, thus vastly increasing the chances for success.

AN OBSTACLE OBSTRUCTING THE MESSAGE

THE PROBLEM WITH QUANTIFICATION
When I first started CSBE, a prominent small business leader said to me, “Byron, if every small business in America cleaned up its act, EPA wouldn’t give a damn – not unless it could count the benefits and add them up. If the benefits can’t be counted, they don’t exist.”

It turns out the guy was right. Bureaucrats are, by definition, central planners who need to gather all the facts, analyze all the information, design comprehensive plans, set long range targets and goals, measure progress, and so on. Most importantly, to justify their existence, they need to show that their plans are working, that is, to quantify the benefits achieved.

Small businesses, however, are so decentralized, so diverse, and so darned kinetic that there’s not a butterfly net big enough to capture them. And new start-ups are hard even to detect, so how can they be corralled and counted, let alone cut to fit the pattern? So even if the environmental benefits generated by small businesses are massive they might as well not exist if they can’t be counted. The result is that they haven’t been counted.

That’s the problem with quantification. Thank goodness, quantification isn’t the only way to prove something. In Small Wonders we parade scores and scores of vivid, concrete examples to prove that small businesses are everywhere greening and greening everything.

In this connection, it’s worth noting that everything reported here is drawn from real-world businesses, taking real risks, reaping real profits or experiencing real losses, and creating real jobs for real workers. Academic theories, dry statistics, and utopian visions play no part here. We think the weight of this real-world evidence puts the quantification problem into perspective, or should.

HOW TO RESPOND?
I am fond of citing a Business Week story about the greening of artificial nail salons. That’s certain to elicit a “So what?” response from the hostile critic.

“You’re right on cue, pal,” I say. “But do you know that nationwide there are now more than 57,800 nail salons in operation, most of them independently owned and operated? Do you know that these salons represent a $6.4 billion industry? Is that big enough to impress you? And that’s just one small business industry! There are hundreds more.”

HOW IT CAN BE DONE: A SUCCESSFUL POLITICAL MODEL - AB 32 IN CALIFORNIA
New clean tech companies and other pro-environment small businesses have matured to the point that they are acquiring political power.
In 2006, for example, the historic passage of the *California Global Warming Solutions Act* was attributed to the bill’s support by many “new voices of business,” including that of Small Business California (SB-Cal), our ally in the state. In fact, SB-Cal was the first generic business organization to support the bill. Other supporters included an impressive array of small clean tech companies, green entrepreneurs, organic farmers, grocers and restaurants, green builders and architects, etc.

**AB 32 Passes: A Great Environmental and Small Business Victory**

For years now, I’ve been telling anyone who will listen to me that small business:

- Constitutes one half of the economy
- Employs one-half of the workforce
- Creates nearly all new jobs
- Consumes one-half of all energy used for commercial and industrial purposes.

And I’ve argued until I am blue in the face that we can’t expect to address environmental and energy issues without the participation of small businesses. Now, in the face of the global warming threat, we seem to be taking some giant steps, at least in the state of California. Here’s the story:

CSBE and SB-Cal have been collaborating closely to create a model statewide Small Business Climate Initiative.

Our first target was to build support for *AB 32 - The California Global Warming Solutions Act of 2006* - under which California will become the first state to impose a limit on all greenhouse gas emissions, including those from industrial plants. The legislation puts California on a path to reducing its emissions of carbon dioxide and other greenhouse gases by an estimated 25 percent by 2020.

This is the toughest legislation in the United States to tackle global warming. It is truly historic. What’s also historic is that for the first time small business played an important role in this. Here’s what we did:

- SB-Cal was the first statewide business organization to publicly support this bill. (See below Scott Hauge’s op-ed published in the San Francisco Examiner.)
- SB-Cal Executive Director Hank Ryan testified on its behalf at legislative hearings, emphasizing the need to make sure the language in the bill would be strong enough to insure long term clean tech investments.
- SB-Cal founder Scott Hauge was a key to obtaining the endorsement of AB 32 by the San Francisco Chamber of Commerce and of other business groups in the state, including Small Business Majority.
- Orchestrated the sending of a letter from a group of business leaders to the Governor describing the reasons why they were endorsing the legislation. (Copy Attached) At the request of the Governor’s chief of staff, Scott organized and chaired meetings of business leaders involved in the issue.

This work was strongly bipartisan. Throughout this effort, we worked closely with Governor Arnold Schwarzenegger’s office and with legislative Democrats.

We also think this law is going to create a huge new industry by providing opportunities for entrepreneurs to develop technologies to meet the demand that will be created by the cap. Small business will therefore be creating thousands of jobs – something they do best.

We intend to spread the word to small businesses in California about the plentiful opportunities they have to save both energy and money by using presently available energy efficient and renewable technologies.

**Recommendations for Public Policy**

The greatest strength of green entrepreneurship is that small business owners – *acting on their own and in their best interests* – can make giant strides in environmental protection while creating economic growth and new jobs. That is indeed a wonder.

How can government aid this process? Here we lay out a series of recommendations that are deliberately modest, pragmatic, low in cost (or no cost) and achievable quickly. We do not call for sweeping new legislation or large new appropriations. Certainly we could pursue far grander visions, and indeed we reserve the right to do so at some future time.

For now, however, in the mist of severe economic distress, we’ve focused on what’s doable immediately. For example, there is at present no champion for small green businesses – as such – in the federal executive branch. It’s nobody’s job. Such a position should be created and at a high level too. The interests and concerns of small green businesses range from agriculture to commerce to energy to labor to science and technology and so on. Their champion must be in a position to survey and influence this broad
Another modest proposal: at present if a small business owner calls the Small Business Administration (SBA) with a question about energy, there is no one to answer the call. SBA should move swiftly to acquire some in-house expertise on small business environmental and energy issues.

Our vow of modesty, however, doesn’t mean that our recommendations are without great monetary significance. Indeed, our top priority is to see that small companies get a fair shake in the disbursement of stimulus funds. This is major. DOE, for instance, has to get a billion dollars in stimulus money out the door every week for the rest of 2009. But will small companies have a crack at any of it?

A SPECIAL EMPHASIS ON STIMULUS FUNDS
We recommend that the Obama administration should address the problems that small businesses have in gaining access to federal stimulus funds. Small Wonders argues that since clean tech companies are already generating economic growth, it makes sense to use them as a launching pad to stimulate the economy. As it is, such companies are trying to scale-up, lower costs, and improve delivery chains to their customer base. An infusion of new capital will enable them to meet market demand that is already growing. Here then is a powerful launching pad for economic stimulus.

A big added plus is this: these businesses being small, as well as green, possess the speed and flexibility needed to deliver results within the 48 months required under the stimulus plan.

But here’s the rub. Bureaucrats, left to their own devices, would much rather hand the money over to a few big companies than to many small ones. For bureaucrats the transaction costs of dealing with many small firms are excessively burdensome. Besides that, big companies can afford to hire lobbyists to monitor every convoluted maneuver in the bureaucratic process so they know how to get their hands on the money.

But big companies don’t have the capacity for innovation, for speed and flexibility that small ones do. So it is that big companies possess the power it takes to get the money but not to do the job. Small businesses possess the power to do the job but not to get the money.

Here’s what green entrepreneurs need to know:

• What stimulus money is available to small green companies, and how do they learn about these sources, at both federal and state levels?

We recommend that the Obama administration establish special windows for small businesses in all federal stimulus programs to accelerate and ease access to government resources, and solicit feedback to correct and overcome barriers. No new funds or appropriations are needed to fulfill this recommendation.

MOBILIZE SMALL GREEN BUSINESSES ON BEHALF OF CLEAN ENERGY AND ECONOMIC RECOVERY
We ask the Obama administration to declare the mobilization of small green entrepreneurial businesses on behalf of clean energy and economic recovery to be a high priority, highly visible administration strategy.

To accomplish this strategy, we recommend that a clean technology priority be assigned to the numerous programs throughout the Federal government already authorized to assist small businesses. These programs are up and running and they are funded. No new funds or appropriations are needed.

For example, small business energy efficiency and renewable energy projects qualify for loans from the U.S. Small Business Administration (SBA), but the agency does little to promote them.

Other federal programs that could be tapped for this purpose include USDA’s Rural Utility Service and Farmers Home Loan Administration loans, Department of Energy Loan Guarantees, Department of Homeland Security State Grants, EPA’s Energy Star programs, DOE/EPA State Grants, and the Department of Labor’s Workforce Innovation in Regional Economic Development (WIRED) Initiative.

This initiative should also direct relevant agencies to help small businesses cut energy costs through dramatic increases in efficiency and to promote widespread use by small businesses of small-scale, on-site renewable energy devices (micropower), which do not require massive investment in new transmission capacity. To initiate this, we recommend that the Administration conduct an assessment of micropower use that focuses on the availability, applicability and affordability of these technologies for small businesses.
Many entrepreneurs felt helpless during the electricity blackouts California faced in 2001. Suffering lost business and damaged inventory drove home the importance of energy efficiency. But few had room in their budgets to upgrade to energy-saving equipment in the years that followed.

Scott Hauge wants to make it easier for the 3.2 million small companies in California to lower their energy bills and avert future shortages. As the owner of CAL Insurance & Associates, a San Francisco insurance firm, he knows the financial realities of running a small business firsthand. So, as president of Small Business California, a nonpartisan advocacy organization that works to provide a better local business environment, he has pushed the state's utilities since 2003 to offer “on-bill financing,” an easy way for entrepreneurs to pay for energy efficient equipment.

In this system, pioneered by companies such as Connecticut-based United Illuminating, even the smallest ventures can pay for upgrades in bite-sized chunks. On-bill financing enables them to take out a zero-interest loan from a utility to pay for energy-efficient equipment, such as a new HVAC system or refrigerators. The entrepreneurs pay back the loan on a monthly basis, with the cost of the equipment added to their usual utility bill. Typically, the money saved from using the new equipment equals the loan payment, resulting in a bill that is the same as it was before the upgrades. “It's an access-to-capital tool,” says Hank Ryan, executive director of Small Business California and founder of the consulting firm Efficiency, Data & Development in Capitola, Calif.

After considerable lobbying by Small Business California, San Diego Gas & Electric and Southern California Gas began offering both small companies and the state's municipalities access to zero-interest, five-year loans to upgrade to more energy efficient equipment at the beginning of 2006. Southern California Edison is now running a pilot program.

Like other incentives for energy-efficiency in California, the cost of on-bill financing comes from a surcharge added to ratepayers' bills. But this one, says Ryan, is generally cheaper for ratepayers than the rebates offered by some utilities, which cover up to 90 percent of the cost of new equipment, depending on the program. On-bill financing typically passes along about 30 percent of the tab to customers of a utility, says Ryan.

Small Business California has also been working with the state's Department of Alcoholic Beverage Control to encourage small business owners to invest in energy efficiency. On the nonprofit's encouragement, the department recently committed to launching a pilot program in which two of its offices will display information on the U.S. EPA's Energy Star program. The goal is to encourage founders of new restaurants to use the free federal program to reduce their energy usage. “The best time to get to operators is when they're setting up the business, hopefully before they make equipment-buying decisions,” says Ryan. If the trial is successful, Small Business California hopes to make the information available in all 25 of the department's offices and on its website.

That's just the beginning, say Hauge and Ryan. They want to embed energy efficiency into the full complement of government programs that small businesses in the state use, so saving electricity and fuel become a routine part of doing business. Ultimately, they would like California to become a model for the rest of the country, by, for instance, fostering the use of plug-in hybrid vehicles through incentives under AB-32, the state's law to fight climate change.

“The whole idea has always been, throughout our history, that states generally take the lead and show the feds what is possible,” says Ryan. “I hope we can do that in California.”

Contact:
Small Business California
2311 Taraval Street
San Francisco, Calif. 94116
415-680-2188
info@smallbusinesscalifornia.org
smallbusinesscalifornia.org
IMPLEMENT AND FUND EXISTING LAW REGARDING SMALL BUSINESS & ENERGY

To mobilize the SBA on behalf of the clean energy economy, we recommend funding and implementation of the small business provisions in the Energy Policy Act of 2005 and the Energy Independence and Security Act of 2007. A good basis for this has already been laid in existing law and policy if these provisions were realized. To date, however, little progress has been made.

A “report card” on the status of these provisions is available at www.smallwondersreport.org/reportcard.pdf

The Energy Independence and Security Act of 2007 also created a priority status within the Small Business Innovation Research (SBIR) and Small Business Technology Transfer programs for small-business concerns participating in energy efficiency or renewable energy research and development projects. This provision remains unimplemented.

We recommend that it be vigorously pursued. SBIR has been a critically important source of capital for entrepreneurs seeking to research, develop and, most importantly, to commercialize breakthrough technology innovations. Cutting edge entrepreneurs use these grants to overcome the technical risk of new ventures as well as to attract commercialization partners and investors. Because of the important role these grants play in fostering robust business formation and growth, many states encourage and support SBIR activity as an economic development strategy.

ADOPT THE GREEN MAIN STREET PROPOSAL

Widespread support for going green exists within the small business community.

In 2007, the National Small Business Association (NSBA), adopted an energy policy that strongly supports energy efficiency and renewable energy programs. NSBA has also challenged its membership to reduce their energy use by 10 percent or more through increased efficiency. NSBA, the oldest national small-business advocacy organization in the United States, represents more than 150,000 owners.

The National Federation of Independent Business (NFIB) has a “Green Initiatives” section on its web site that outlines many of the green and energy efficiency efforts presented in this report. Much good information on energy efficiency can be found here, such as switching to high efficiency heating and cooling systems; buying Energy Star appliances; investing in green vehicle fleets; recycling; and support for locally grown food.

Building on this base to help small businesses cut energy costs and to become more energy self-reliant, we recommend adoption of Green Main Street, a proposal now being circulated by the American Chamber of Commerce Executives and the Association of Small Business Development Centers, among others. Green Main Street would strengthen EPA’s Energy Star Small Business program, which promotes energy efficiency, and would expand it to include the provision of information and technical assistance to small business owners about use of small-scale, on-site renewable energy devices (micropower).

Small Wonders supports creation of a new “Green Main Street” program in the federal government, based on the present Energy Star Small Business program in the US Environmental Protection Agency.

The Green Main Street proposal can be viewed at www.smallwondersreport.org/gms.pdf

CREATE A CLEARINGHOUSE ON ON-BILL-FINANCING

The proposed Green Main Street project should include an On-Bill-Financing (OBF) clearinghouse. The objective should be to make OBF available everywhere possible through the nation.

This clearinghouse should offer individual counseling on OBF to environmental and energy policy-makers at all levels of government, to small business leaders, the media, and interested individuals.

There’s a basis for this in existing law. EISA 2007 authorizes SBA to guarantee On-Bill-Financing agreements between small businesses and electric utilities in order to cover the utilities’ risk in the deal.

We recommend further that State Climate Change Action Plans incorporate OBF into their portfolio of options. (Expanding OBF requires action by states.)
It’s not easy to get Washington lawmakers to pay attention to the needs of small companies. Kyle W. Kempf faces this reality every day.

Kempf is senior director of government affairs for the 71-year-old National Small Business Association, which includes entrepreneurs ranging from home-based CPAs to manufacturers with as many as 500 workers. The average member employs about 12 people. The nonprofit trade association has represented small business in many a national debate, such as the one raging over universal health care. It recommends that individuals be required to carry health insurance, with government help in some cases.

Its concerns also extend to environmental issues. When gas prices rose in recent years, the lobbying group developed a far-reaching policy that calls for increased domestic energy production, more diversified sources of energy – such as solar and wind power – and greater emphasis on efficiency. The NSBA has actively supported tax incentives to speed the creation of technology used in renewable energy and hybrid vehicles.

One victory came on the last federal energy bill. The NSBA worked closely with the House and Senate Small Business Committees, persuading legislators to require the SBA to support a government-wide program to help entrepreneurial firms become more energy efficient. Result: The SBA must now include a link from its high-traffic website to the federal EPA’s Energy Star program, which helps small companies to audit their energy usage and reduce waste. “The SBA hasn’t traditionally thought of environmental issues or energy efficiency as one of its responsibilities,” says Kempf, who has held his position since July 2006, following a stint in a similar position at a specialty manufacturing association. “The EPA doesn’t think about small business and the SBA doesn’t think about energy. Now they’re working together.”

The NSBA also persuaded lawmakers to make it permissible to use several types of SBA loans, including those in the 7(a) flagship lending program, for renewable energy and energy efficiency improvements. These loans, which the agency guarantees for banks, can reach $2 million. Also included are Express Loans, which streamline paperwork for small business owners who need $35,000 or less. On top of this, manufacturers can now also tap the SBA’s CDC/504 program – which typically provides long-term, fixed-rate financing for land, buildings and other fixed assets – to finance projects that would reduce the borrower’s energy consumption by 10% or more or generate renewable fuels.

“To be honest, getting Congress to even think about small business when they were writing an energy policy was a victory, sad as that might be,” says Kempf. “Generally, they craft energy policy and it’s about GE or Boeing. They don’t think about the fact that half the economy is small businesses, which consume half the country’s energy.”

Saving energy doesn’t always require small businesses to take out loans, of course. In a recent campaign, the NSBA has begun calling upon members to participate in the EPA’s Energy Star Challenge. The agency’s program is designed to help entrepreneurial companies cut energy consumption by at least 10 percent through a series of small steps. These start with assessing and tracking the energy efficiency of their facilities and setting goals for improving it.

If all of the nation’s small businesses participated in Energy Star, Kempf says, the effects would be staggering. “It’s easy to look at one giant manufacturing plant and how much energy could be saved,” he says. “When you try to quantify 27 million small businesses replacing their light bulbs and putting in controllable thermostats, it’s not as sexy – but it adds up.”

Contact:
National Small Business Association
1156 15th St., Suite 1100
Washington, D.C. 20005
202-293-8830
info@nsba.biz
www.nsba.biz
WHAT’S NEXT?

*Small Wonders* has amply demonstrated that small green entrepreneurial businesses are found almost everywhere doing almost everything. What astonishing diversity they embody! But this very diversity – these dissimilarities – also serves to divide these businesses, to keep them apart. What unites them?

Most entrepreneurs green or otherwise, are small-business people, almost by definition. This is because experimentation is best conducted on a small scale where it is both less expensive and safer, and because risk-adverse big institutions don’t actually foster innovation and entrepreneurship nearly as well as daring little ones.

This connection between innovation and scale is crucial. As small business owners, green entrepreneurs often face their toughest challenges. It is one thing to devise an innovation, quite another to bring it successfully to market. Inventing something may actually be easier than financing its commercialization.

The significance of this connection is starkly demonstrated in the economic crisis confronting the country today. The drying up of access to credit and capital now threatens the welfare, if not the very existence of many green small businesses. Credit is the lifeblood of these small firms and now they are being hit hard by unexpected cuts to existing credit, home equity lines, and credit card limits. Thus, we cannot promote the interests of green entrepreneurs without promoting the health of small business as a sector.

That most green entrepreneurs are united in their smallness is a potent fact given scant recognition. We’re proud that the Center for Small Business and the Environment (CSBE) has been a leader in gaining recognition for green entrepreneurs, and even prouder that we have stood almost alone in asserting the interests of these environmental heroes as small business owners.

CSBE wants to build on this foundation and expand it dramatically.

This will be challenging work. Green entrepreneurs are not only small entities, but often they are brand spanking new and, thus, unaffiliated with other businesses or trade associations. And there are thousands of them, maybe tens of thousands. It is fair to ask: can so many unaffiliated small business owners be reached, let alone mobilized?

**BUILDING A SOCIAL NETWORK OF GREEN SMALL BUSINESS OWNERS**

We propose to use the cost-effective power of the web to reach and mobilize this community. Sure, the green business universe is vastly decentralized, diverse, and dynamic but so is the web. That makes it exactly the right tool for the job.

CSBE proposes to become the hub of an expansive “social network” of green entrepreneurs tied together in real time through a dynamic web site. This network will address the needs and concerns of green entrepreneurs as small businesses.

The web site will greatly expand our reach, linking these green small business owners and fostering a shared consciousness among them. The web site will inform and alert them to their critical interests in public policy affecting energy, the environment, entrepreneurship, and small business.

The web site will expand on *Small Wonders*, updating it constantly, adding new models and new profiles. It will facilitate the broad replication of green entrepreneurial models by tracking and reporting on their progress and promoting them to the media.

Finally, the new CSBE web site will be – explicitly – a community organizing tool, building an ever-expanding new business constituency that influences environmental and energy issues for the good of the country.

Helen Anderson
John Arensmeyer
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Business entrepreneurs measure success in profits; social entrepreneurs measure it in benefits to society. Green entrepreneurs employ both measures, seeking to build profitable organizations that benefit society.

We hope that Small Wonders – at the least – suggests the vast potential of this phenomenon. We hope – at the least – that the work of the Center for Small Business and the Environment will help realize this vast potential.

Of course, if this potential is realized, the credit belongs to green entrepreneurs themselves. All we've done is toot their horn. And if we are heard it's because a lot of people have helped us do the tooting.

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