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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

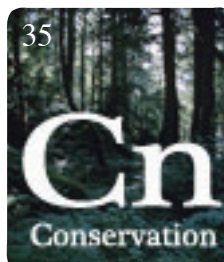
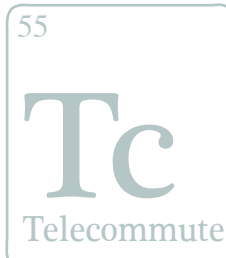


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NOTE TO READERS

This document is a summary of a much longer report that can be viewed in its entirety on SmallWondersReport.org. Both this summary and full text of the report can be downloaded from the website. Readers are urged to visit the website because it substantiates the arguments made here with abundant examples: profiles, mini-case studies, and capsule descriptions of hundreds of small green businesses.

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 facilitates the greening of small businesses through increased energy efficiency, expanded use of renewable energy technologies, and other ecologically sound business practices.

CSBE, a project of the Tides Center, a non-partisan 501 (c) (3) organization, is funded by grants from the Changing Horizons Fund, the Belvue Fund, and the Rockefeller Brothers Fund.

ABOUT THE AUTHORS

Byron Kennard, founder and Executive Director of The Center for Small Business and the Environment, is a long time advocate of both the environment and of small-scale enterprise. Working as a community organizer for The Conservation Foundation in the late 1960s, Byron helped lay groundwork for the first Earth Day. For this work, Kennard was later awarded the Leadership Medal of the United Nations Environment Program.

In the 1970s, Kennard collaborated closely with the late E. F. Schumacher, author of *Small Is Beautiful*, to realize the book's vision of small-scale enterprise as a principal protector and restorer of the environment. Byron is the author of *Nothing Can Be Done, Everything Is Possible*, a book of essays on social change. He is a graduate of Ohio State University.

Elaine Pofeldt is a former Senior Editor of *FORTUNE Small Business* magazine. She's written stories for *Crain's New York Business*, *E Magazine*, *Inc.*, *Forbes*, *Good Housekeeping*, *Marie Claire*, *Working Mother*, and other publications. Currently, Elaine also does editorial web consulting for clients including Time Inc. Content Solutions. Elaine has been nominated for the National Magazine Award for feature writing.

Elaine is a graduate of Yale University, with a B.A in English.

DISCLAIMER

The information in this report and on SmallWondersReport.org is provided solely as a service to the public by the Center for Small Business and the Environment (CSBE). All information about specific businesses, technologies and programs is drawn from their websites or other published sources. CSBE assumes no responsibility for the accuracy of the information presented. Descriptions here do not imply endorsement by CSBE of these companies or technologies.

INTRODUCTION

There's a pizza joint in Minneapolis that's about as green as a pizza joint can get. And Galactic Pizza doesn't shrink from advertising this fact. It claims that the pizza it sells is "planet saving." To back up this claim, Galactic delivers its pizza via all-electric vehicles and costumes its delivery staff as comic book, planet-saving heroes like Superman.

Galactic powers its restaurant by wind energy. The mozzarella cheese it uses comes from cows untreated by growth hormones. Galactic's 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.

Query: Is Galactic Pizza – apart from its cute story and clever marketing strategy – of any consequence in the larger scheme of things? Should policy-makers in state capitals and Washington, DC, take note of "planet saving pizza?" Our answer is yes. Galactic's is just one of countless small green businesses at work in America today, all of them equally enterprising, ingenious, and ardent about saving the planet.

Some of these small green business stories are told here (and many more on *SmallWondersReport.org*), but we haven't begun to scratch the surface. Even so, we provide enough evidence to prove our point that small businesses are greening almost everything under the sun.

Small Wonders celebrates small business's skill at detecting, seizing, and exploiting new economic opportunities. It documents how this skill has been enlisted full force on behalf of planetary ecology, producing a boundless cornucopia of benefits, both economic and environmental. Will wonders never cease?

We count this as one of the planet's best hopes for the future, a profoundly important and constructive development. Policy-makers, take note!

Strangely, however, this achievement has gone unheralded, even by environmentalists. To offset this neglect, *Small Wonders* sounds the trumpets and beats the drums. Hey, maybe entrepreneurs can save the planet!

But what we describe is no utopian vision. Everything reported in *Small Wonders* is drawn from real-world businesses taking real risks, reaping real profits or experiencing real losses, and creating real jobs for real workers.

This report is the first effort ever to assess the economic and environmental benefits of green entrepreneurs. What's more, we've tried to examine this phenomenon *as a whole*. And what does it mean as a whole?

Ed Furia, a longtime green entrepreneur and CEO of AFS Trinity Power Corporation, has an answer. "Small business is how things change," he says. AFS Trinity Power Corporation, located in Bellevue, Washington, is just one of the many green businesses described in *Small Wonders*. His company has produced two full-size, plug-in hybrid electric SUV prototypes that get *150 miles per gallon*.

If AFS Trinity succeeds, it will go a long way toward revolutionizing transportation. And there are scores of other green entrepreneurs working on scores of other types of innovative transportation technologies: alternative fuels – biodiesel, hydrogen, natural gas, fuel cells – increased fuel economies, improved public transportation, pedal power, electric bikes, and on and on.

Simultaneously, innumerable green entrepreneurs are devising technological innovations in other sectors of the economy: agriculture, energy, housing, manufacturing, retail – most of them working their tails off.

In this connection, it's important to note that nearly all green entrepreneurial firms are small businesses. And it is as small business owners that green entrepreneurs often face their biggest challenges. However good a new idea is, an entrepreneur has to obtain access to capital or credit in order to develop and test it. That's rough sailing, especially today. *Small Wonders* stresses this connection between entrepreneurship and small scale enterprise because, important as it is, it is usually overlooked when green technologies are considered. We enthusiastically focus on businesses that are (a) small, and (b) green.

Thank goodness there are so many of them. They are changing society for the better, one planet-saving innovation at a time.

Byron Kennard

Byron Kennard, Executive Director
The Center for Small Business and the Environment
June 10, 2009

RECESSION & RECOVERY

SMALL BUSINESS IS THE ENGINE OF THE ECONOMY

America's 27 million small businesses produce 51 percent of the private sector output, make 47 percent of all sales, and employ more than half the country's private work force. That's half of the economy. (Source: U.S. Small Business Administration)

In recent decades, small businesses have created 60 to 80 percent of all net new jobs. In the most recent year with data (2005), small businesses created 979,102 net new jobs, or 78.9 percent. (Source: U.S. Small Business Administration)

Small businesses are also 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. (Source: Small Business Technology Council)

Small businesses possess all the brains and talent needed for the task of innovation. 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). (Source: Small Business Technology Council)

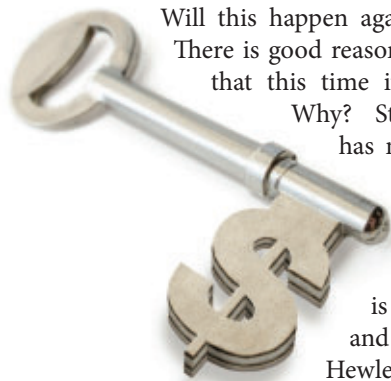
Small businesses can be found in virtually every nook and cranny of society, from the inner city, where they provide 80 percent of jobs, to rural areas, where they provide 66 percent. (Source: U.S. Small Business Administration)

SMALL WONDERS

Small business is a social institution full of wonders, fabled for its deft and nimble touch, its speedy responsiveness, and its willing embrace of risk. For decades, most new jobs and innovations have stemmed from small business, earning its sobriquet as "the engine of the economy."

And – wonder of wonders – many small businesses flourish even in the dark days of economic recession. In the last five recessions, small businesses led the nation's recovery by creating new jobs and innovations, according to the Kauffman 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 innovative enterprises take off, creating new jobs and new wealth. (Some of today's business giants, such as General Electric, IBM, Kraft, McDonald's, and Walt Disney, were started in recessions.)



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.)

If history is any guide, small businesses will once again lead the nation's recovery. But this time they will do it by creating *green* jobs and *clean energy* innovations, leading to a green entrepreneurial boom. A happy prospect, indeed, but what justifies it?

To start with, going green may be the biggest economic opportunity of the 21st century, making it irresistible to entrepreneurs. Venture capitalist John Doerr calls it "the mother of all markets."

Plus there's this: as much as anything, entrepreneurs want to go green. "The best brains in the country are no longer working on the next pharmaceutical drug or the next Silicon Revolution," says Vinod Khosla, co-founder of Sun Microsystems. "They want to work on energy."

In entrepreneurship, passion counts for a lot.

Besides, in the global economy, the main driver of new wealth is innovation which is today achieved largely through environmentally benign increases in efficiency and resource productivity.

Going green also combats global warming – an urgent necessity in any case – while creating new businesses and jobs. That's a winning political formula.

On top of that, there's strong and growing political support in general for going green – not just in Washington, DC, but in many states and localities as well. This means entrepreneurs can operate in the knowledge that this opportunity has firm, consistent political backing.

THE EVOLVING EDGE OF THE ECONOMY

The strongest argument for the green recovery is simply this: a green entrepreneurial boom already exists. In recent years, the green sectors of the economy – clean technology, organic agriculture, green building, ecotourism, and so on – have constituted its evolving edge.

True, in every case, green sectors still represent only a small fraction of the total market, so they have a long way to go. But that's the way they're going! And at a fast clip too.

For example, in 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. Organic agriculture, green building, and ecotourism have been growing at a rate 20 percent faster than non-green counterparts.

It's true too that the current economic crisis has slowed the momentum of this green entrepreneurial boom (especially that of big solar and wind projects), but it hasn't halted it. The current evidence is that small-scale clean technology, green building, and organic agriculture are pattering along pretty well. If history is any guide, these green sectors are likely to be emboldened by a surge of newly-minted entrepreneurs driven by a thirst for innovation and the daring of the hungry.

And, finally, there's the renowned ability of small businesses to adapt quickly to changed conditions, to turn around on a dime. Here's a straw in the wind suggesting that this is happening now.

FROM INNER CITIES TO OUTER SPACE

America's 27 million small businesses are doing almost everything under the sun, from operating hot dog stands to launching high-tech start-ups. What's more, these small enterprises may be found almost everywhere, from inner cities to outer space.

This near-universal pervasiveness gives small business – as a social institution – the capacity to green almost everything everywhere. And – lo and behold – that's what's happening now. But small businesses are going about this quietly, bit by bit, devising an innovation here, an innovation there.

In inner cities, where they provide 80 percent of all jobs, small firms are now adding touches of green. In south Chicago, for example, Solargenix Energy makes solar water heating collectors in the first manufacturing plant constructed in the area in 35 years. The city of Chicago, as part of the deal, purchases these water heaters for use in fire houses, police stations and other municipal buildings.

In the suburbs, some small businesses are coming up with ingenious ways to reduce the woes of commuters.

One example is NuRide, a small business in Essex, Connecticut. NuRide is an online network that facilitates carpooling, vanpooling, telecommuting, biking, walking and taking public transportation. A free service, NuRide, is supported by sponsors who reward NuRide members for ride sharing. So far NuRide has signed up 42,062 members, enabled 2,575,405 shared rides and prevented 29,241 tons of greenhouse gas emissions.

In rural areas, where small businesses provide 66 percent of all employment, many small farms and ranches are models of greening their operations. The Black River Organic Farm (blackriverorganicfarm.com) in Ivanhoe, North Carolina, for example, is a 16 acre family farm, owned and operated by several generations of the Hartmann family. The Hartmanns distribute their vegetables through a Community Supported Agriculture (CSA) program. 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.

Another example is the Veseth Cattle Company in Malta, Montana, which has been owned by the same family since they arrived in the area in 1886. Four generations of Veseths now live and work on the operation. Since 1905, the ranch has developed strategies to distribute livestock, reduce the impacts on traditional riparian areas and enhance wildlife habitats.

The Veseths 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.

Small green businesses take root in wilderness areas, too. Kent John, owner of the Great Alaska Adventure Lodge, sees the impacts of climate change regularly while guiding on the Kenai River and worries about its effects on his business. To minimize its environmental impacts, Great Alaska Adventure travel is designed for small groups.

John is also president of the Alaska Wilderness Recreation and Tourism Association, 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.

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.

Many more examples of small green businesses can be found at SmallWondersReport.org. The website parades an almost endless array of small green businesses, surprising in their variety, impressive in their scope, and astonishing in their overall impact.

AUTOS: Parts makers shifting to wind business

David Mercer, Greenwire - May 7, 2009

Dozens of companies at the American Wind Energy Association conference in Chicago have something in common: They have traded their auto-related business for a niche in wind-power.

"We have seen these indicators for years," said Pete Ostrander of Merrill Technologies Group, which has retooled itself from an automaker supplier to a wind industry supplier.

"[The auto industry] needed to clean up their own closets."

Michigan has 700 manufacturers who now do wind-industry work, and most of them have been or still are auto industry suppliers,

said Frank Ferro, the international business development manager for the Michigan Economic Development Corporation.

The switch is a natural one for many, as the process for making wind turbine parts is similar to making auto parts, Ferro said.

In Ohio, more than 500 companies are active in the wind industry supply chain or entering the business, according to the state department of economic development.

Most of them are either hedging their bets on auto industry work or leaving the business altogether, officials said.

SMALL GREEN BUSINESSES AS AGENTS OF CHANGE

As American society now struggles with devastating challenges to its business institutions and social support systems, the time has come to unveil this astonishing new world, to see it as a whole. From this perspective, green entrepreneurs can be seen as potent agents of profound social change.

A TECHNOLOGICAL REVOLUTION

Small green businesses are generating countless innovations in agriculture, energy, housing, and transportation – innovations that are creating new jobs and economic growth and laying a solid foundation for the post-industrial economy.

These technologies address energy generation – geothermal, solar, wind, hydropower – and energy storage too – batteries, fuel cells, and so on. They also address alternative fuels and fuel-efficient vehicles, water treatment, recycling, and waste management. For example, startups are perfecting and commercializing solar roofing materials, basement energy-storage devices, batteries for plug-in hybrids, and clever software to optimize electricity use.

Often, these technologies, in addition to being more efficient and less polluting, are also smaller in size, lighter in weight, quieter in operation, and far more durable than the conventional technologies they seek to displace.

Here small green businesses are serving as agents of “creative destruction,” the process by which radical innovators compel big, established businesses to adapt or die, thus renewing the economy, much as forest fires renew the forests. Some examples:

- **Edenspace**, a small business in Kansas, seeks to reduce dependence on fossil fuels through innovative applications of plants for renewable fuels.
- **Aquapoint**, a small business in New Bedford, Massachusetts, designs and manufactures small-scale wastewater treatment technologies for decentralized sewer systems. These technologies generate greater cost-benefit advantages than those associated with conventional technologies.
- **GridPoint**, a small business in Arlington, Virginia, is launching a revolution through “smart grid” technologies that provide homeowners, businesses, and utilities with vast amounts of information about precisely how, where, and when energy is actually being used. This enables both consumers and producers of energy to achieve high levels of energy conservation and efficiency.

Sometimes these small businesses really take off and grow to become big businesses. A good example is A123Systems, which was a start-up in 2001 that’s now become one of the world’s leading

suppliers of high-power lithium ion batteries. The company, located in Watertown, Massachusetts, produces batteries that store more than twice as much energy as nickel-metal hydride batteries, the type used in today’s hybrid cars. A123 batteries are smaller, lighter, and more durable than conventional batteries.

In the course of its expansion, A123 fostered the growth of another small green business, T/J Technologies, a Michigan developer of energy efficient battery solutions, by acquiring it and helping it to direct more resources toward its goals.

A CULTURAL TRANSFORMATION

In the conventional view, small businesses are so mundane that to speak of them in anthropological terms seems pretentious. But, given the many alterations in lifestyle that small green businesses enable, anthropological observations are compelling and even inescapable.



Small green businesses are by providing millions of Americans with products and services, ranging from green cradles to green graves (literally) that make more sustainable lifestyles possible – a shift in values that younger generations of Americans are embracing as the desirable way to live.

This change is not just for our time but is one that will be transmitted to future generations. So the claim of Galactic Pizza (described in the Introduction) that it peddles “planet saving pizza” is not far from the mark.

Consider this: Galactic embraces the principle of local production for local use, an idea advocated by, among others, Mohandas Gandhi and E. F. Schumacher, author of *Small is Beautiful*. 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.

A good example of a business that profits from staying local and going green is Oakhurst Dairy, the largest family run business of its kind in northern New England. Oakhurst buys milk from about 85 independent farms in Maine. 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. The company’s goal is 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.

Many small businesses embrace localism, most notably those enrolled in the Business Alliance for Local Living Economies (BALLE) which consists of 20,000 entrepreneurs, small business leaders and others intent on building a new economy around the idea.

BALLE is part of something far larger: a decades-long boom in organic agriculture. According to the Organic Trade Association, sales of organic food and beverages in the U.S. have grown from \$1 billion in 1990 to an estimated \$23 billion in 2008. This boom is thanks largely to the thousands of small green businesses that supply everything from organic soup to organic nuts to consumers almost anywhere in the country.

Organic agriculture is itself part of something bigger: a growing consumer demand for sustainable lifestyles. According to Lifestyles of Health and Sustainability (LOHAS), one in four adult Americans – nearly 41 million people – comprise this market. (Consumers between the ages of 18 – 34 are a big part of it.) LOHAS estimates this market's worth to be \$209 billion annually.

Small businesses are the principal purveyors to this market and they are providing an astonishing variety of products and services. In fact, *SmallWondersReport.org* lists 101 different ways that small businesses are delivering the goods, ranging from green cradles to green graves (literally).

The list includes baby clothes, toys, pet food, cosmetics, cleansers, garden supplies, home furnishings, household appliances, jewelry, mattresses, and shoes. It includes car rentals, auto repair, caterers, dairies, dry cleaners, florists, grocers, hotels, laundries, and even nursing homes.

With all these remarkable accomplishments to its credit, why then does the environmental role of small green business go unheralded?

Mostly because these firms – besides being small – are so decentralized, diverse, and dynamic that they are hard to see or count, let alone track or monitor. These small businesses are, in effect, invisible even when they exist right beneath one's nose.

Even people striving to focus on small business have a hard time getting a clear picture of it. All that decentralization, diversity and dynamism makes the small business universe appear unfathomable, even disorderly or chaotic. But try imagining small business as a system. You'll see that it functions as a complex, interdependent, dynamic web, much as nature does. These characteristics, just as they do in natural systems, make the small business system strong, resilient, efficient, flexible and responsive. Like nature, small business is a self-organizing system. It's a universe teeming with boundless diversity and engaged in constant experimentation. In the small business universe, as in nature, cycles of birth, death, and rebirth revolve continuously.

But how many people perceive small business in this way? Not many. So the upshot is that the environmental achievements of small businesses are overlooked or ignored. And to top it off, most small green businesses are not yet organized as a group or unified in a way that makes their presence felt politically. That's now changing.

REFORMING THE OLD POLITICAL DEBATE

Small Wonders demonstrates that the economic clout of small business has been enlisted on behalf of environmental protection, but what about its political power? This is considerable:

Seventy million Americans either own or work for a small business. That's nearly one quarter of the entire population and 33 percent of the voting population.

Small-business owners, by themselves, make up 15 percent of registered voters and they exercise considerable clout both in Washington, DC, and the state capitals.

Historically, the political stance of small business on environmental and energy issues – at least, as typically perceived – has been characterized almost entirely by opposition to government regulation. While the conflict between small businesses and government regulators is genuine and thorny, it is by no means the whole story.

Small Wonders tells another story. It describes a vigorous new world of environmentally benign enterprise, whose very existence transforms the fundamental debate over “economics versus environment” into something new and much better.

The best example of this occurred in California in 2006 during the debate over the state's *Global Warming Solutions Act (AB 32)*, a landmark environmental victory. While the passage of this legislation received national and even international attention, the story of the unique coalition that prompted this victory has been overlooked.

AB 32's passage was attributed to the bill's support by many “new voices of business,” including that of Small Business California, a leading advocacy group. In fact, Small Business California was the first generic business organization to support the bill. Other supporters included an impressive array of:

- Clean tech companies (solar, wind, and other renewable energy companies; alternative transportation and fuels, etc.)
- Green builders, architects and designers
- Organic farmers, green restaurants
- Recycling companies
- Businesses producing ecological home and office products
- Ecotourism businesses
- Businesses that manufacturer, sell, install and service energy efficient equipment.

As these voices were raised, the terms of the debate began to change. It was no longer the stale “economics versus environment” formulation, but a new debate that pitted efficiency against inefficiency, and superior new technology against outmoded technology.

Green entrepreneurs, it turns out, are especially credible advocates for the interests of the rising post-industrial economy. They're not utopian visionaries but real business people running real risks to obtain real profits and create real jobs. This impresses politicians mightily. It impressed the California Assembly.

The promise and excitement offered by these new voices of business won the day. As Bob Epstein, co-founder of Environmental Entrepreneurs, declared at the time, “This is the tipping point in the country's climate-change debate.”

Word of this political development soon reached Capitol Hill, thanks to a Congressional briefing on AB 32 sponsored by the Environmental & Energy Study Institute and the Center for Small Business and the Environment.

This led to a hearing by the Senate Committee on Small Business and Entrepreneurship, the first Congressional inquiry ever into the

relationship between global warming and the small business half of the economy. Simultaneously, the House Small Business Committee began to embrace environmental and energy issues as well.

This, in turn, led to the inclusion of several useful small business provisions in the *Energy Independence and Security Act of 2007 (EISA 2007)*. It's politically intriguing to note that these provisions were endorsed by the Air Conditioning Contractors of America, the Independent Electrical Contractors, the National Roofing Contractors Association and the Plumbing-Heating-Cooling Contractors Association, potent business groups not usually thought of as tree-huggers.

Perhaps most importantly *EISA 2007* mandates a role for the U.S. Small Business Administration (SBA) in energy policy and management. For the most part, these provisions remain unfunded and unimplemented, an oversight which the Obama administration should correct. That would be a good start.

What's needed, however, is a heightened political consciousness by green small-business owners as a community. By making small green businesses more visible as a group through *Small Wonders*, CSBE aims to help launch a powerful new pro-business, pro-environment constituency.

PHYSICIAN, GREEN THYSELF

Greening, like charity, should begin at home. What about small business workplaces? How green are they? This is not a trivial concern. Small businesses – half of the nation's economy – consume an estimated one-half of all energy used for commercial and industrial purposes at a cost estimated at \$98.5 billion annually, according to the Energy Security Group (ESG).

ENERGY EFFICIENCY

Small business owners making energy efficiency upgrades can typically achieve 30 percent savings or more. If all small businesses did so, ESG estimates that they'd save approximately \$30 billion annually. These efficiency upgrades would reduce carbon emissions by 182.2 million tons. And the reduced demand that these energy savings represent translates into a reduced need for 36 new coal-fired power plants.

There are lots of practical, simple ways to cut energy use. Energy efficiency for small businesses is not rocket science. Mostly, it involves doing the same simple things over and over again in millions and millions of workplaces.

Small-business owners can start by getting their cooling and heating systems tuned-up regularly. According to the Air Conditioning Contractors of America, some simple steps – identifying duct leaks, checking airflow, cleaning coils and changing filters – work wonders, reducing energy use by up to 40 percent in some cases.

Small businesses can switch to energy-efficient light bulbs. It may sound trivial, but, according to EPA's Energy Star program, lighting in a typical commercial building 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 the cake is that small businesses can make energy efficiency upgrades rapidly – virtually overnight – at a time when quick, sure fixes are urgently needed.

Much work remains to be done here, but a solid start has been made. *Small Wonders* describes scores of existing, successful models, technologies and programs whereby small-business owners are reducing energy use profitably. Most are widely replicable throughout the small business half of the economy. The potential here is huge and the solutions are practical. Here are some of these models:

Energy Star Small Business

Most everything small-business owners need to get started on energy efficiency can be found on the Energy Star Small Business website. www.energystar.gov/smallbiz

Energy Star Small Business works with small business trade associations. Here's a good example:

National Automobile Dealers Association (NADA)

Almost one thousand auto dealers are now voluntarily greening their operations as part of the Energy Stewardship Initiative of the National Automobile Dealers Association (NADA). If all 19,700 NADA members reduced their energy consumption by just 10 percent (the Association's goal), they would save approximately \$193 million in energy costs and eliminate more than one million tons of greenhouse gas emissions each year.

Scores of other small business trade associations could employ this model, but Energy Star Small Business lacks the money to initiate or respond to them. That's too bad because the potential is staggering.

While it's impossible to calculate job creation by small business overall, it is possible to make estimates for selected small business sectors. For example, if all the members of the National Restaurant Association (380,000 members), National Grocers Association (50,000 independent stores), and the National Association of Convenience Stores (140,655 stores) reduced energy consumption by 30 percent, they would save nearly \$6 billion annually. Based on prevailing wages in such industries, that's enough money to pay the annual salaries of nearly 250,000 employees.

Small Business Development Centers (SBDC)

A national network of one thousand Small Business Development Centers (SBDC) provides free management consulting and technical assistance to more than one-half million small businesses each year. These centers can help small business owners to become energy efficient.

A terrific model is the Pennsylvania SBDC Environmental Management Assistance Program, based at the Wharton School of the University of Pennsylvania. This award-winning program has conducted over 500 on-site energy assessments showing that

clients can reduce their costs between 25 and 30 percent. Among those businesses that have been assisted are auto repair shops, cafeterias, dry cleaners, florists, gas stations, nursing homes, theaters, wineries, restaurants, convenience stores, independent grocery stores, and small manufacturers.

ON-BILL-FINANCING

If small-business owners are to realize their energy savings potential quickly, they need a good measure of facilitation. Fortunately, there's a great tool available that does just this: On-Bill-Financing (OBF).

Using OBF, an electric utility helps its small business customers reduce their energy use through audits and upgrades, along with 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.

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.

In 2005, the Center for Small Business and the Environment, in partnership with our ally, Small Business California, asked the California Public Utilities Commission (PUC) to instruct the state's utilities to begin offering OBF. And that's what's happened. After a demonstration period, the California PUC issued such an order, making OBF available in 2009.

And there's small green manufacturing too --

According to the National Association of Manufacturers, 37 percent of all manufacturing is now done by small businesses. Some of these manufacturers are also going green in order to save money and improve efficiency, but also to demonstrate community service. A good example is Fairmount Minerals located in Chardon, Ohio. This small business is one of the largest producers of industrial sand in the United States. The company restores the land of its mining pits to create bird habitats, efforts that won it the Environmental Business of the Year Award from the Audubon Society of Michigan in 2005. In 2007, The National Association of Manufacturers gave Fairmount the first annual NAM Sandy Trowbridge Award for Excellence in Community Service.

Plus, there's this — many small businesses will benefit from efforts to make America more energy efficient and self-reliant.

Small business people don't 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 can add up when you consider that nearly \$142 billion was spent nationally in 2005 on space heating and cooling for residential and commercial buildings. A big added plus is that

energy efficiency provides jobs for American workers that can't possibly be outsourced to abroad because the work is all local.

MICROPOWER

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.

Micropower fits small business like a glove. Small business, after all, is decentralized, as is micropower. Solar water heaters, for example, may work best in economic terms for a cafeteria or a laundry. So the potential is immense. Much of the small business half of the economy can conceivably be taken off the grid through use of micropower.

A few small companies are already relying on micropower to obtain energy independence.

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.

The Raritan Inn

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 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.

The Stella Group

Renewable energy advocate Scott Sklar has invested about \$50,000

PUBLIC POLICY

RECOMMENDATIONS FOR FEDERAL ACTION

Small Wonders concludes with recommendations for action whereby the growing power of green entrepreneurship is fully mobilized on behalf of the emerging clean energy economy and, as well, the nation's economic recovery. The report urges the Obama administration to:

Declare the mobilization of small businesses on behalf of clean energy and economic recovery to be a high priority, highly visible administration strategy.

Assign a clean energy priority 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.

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, which do not require massive investment in new transmission capacity.

A special emphasis on stimulus funds

The report recommends that the Obama administration should address the problems that small businesses have in gaining access to Federal stimulus funds. It 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. Being small and decentralized means these businesses are hard to reach by large centralized government programs. Often Federal efforts to aid these businesses have choked on bureaucratic or regulatory complexity. In other words, small businesses may be able to respond quickly, but is the Federal government?

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?
- Are these funds readily accessible to small businesses? What can be done to facilitate application?

We recommend that the Obama administration establish special windows for small businesses in all federal stimulus programs to

to install clean energy technologies in the 880-square-foot headquarters he has created in a two-story office building behind his home in North Arlington, Virginia. Atop the structure is a small wind turbine from Southwest Windpower, which generates electricity for the building. The roof also has solar electric roofing shingles, with electricity stored in a GridPoint battery bank.

Inside, there are double-paned, argon-filled windows, thermal barrier paint, and thick insulation in the walls and ceiling to conserve energy. A ductless heat pump provides efficient heating and cooling, while a simple ceiling fan keeps the air flowing. The lighting comes from energy-saving cold-cathode compact fluorescent bulbs and bundled LED light bulbs.

The Stella Group stores energy in a battery bank that collects the renewable energy the building generates, with a hydrogen fuel cell as backup. Sklar generates almost all of the 1.5 kw of energy the building uses daily. "I generally don't have energy bills in my Virginia office at all for most of the year," he says.

Small businesses are not only consumers of micropower but often the creators of such devices. A good example is Southwest Wind Power located in Flagstaff, Arizona. This small business is the world's largest manufacturer of small wind turbines. The company has sold them in 120 countries. Southwest Windpower received the U.S. Small Business Administration's Small Business Exporter of the Year Award for 2009.

CSBE sees small businesses as a natural – and huge – market for micropower. If this connection was made, it would be a marriage made in heaven. We think this path to energy independence is bound to excite small business owners who, typically, treasure self-reliance.

Most small business owners, however, are largely unaware of their micropower options. *Small Wonders* recommends that Energy Star Small Business be vested with the authority and resources needed to promote use of micropower throughout the small business sector.

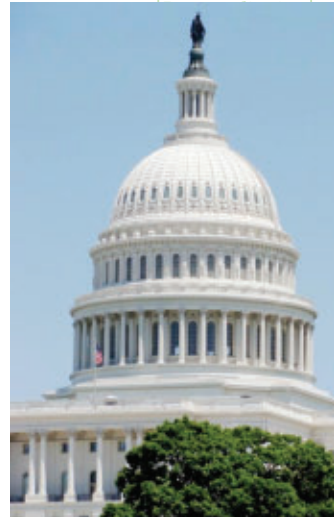
SILVER BUCKSHOT: SMALL BUSINESSES COMBATING GLOBAL WARMING

WHAT IS SILVER BUCKSHOT?

The "silver buckshot" strategy recognizes that a cap-and-trade program to reduce carbon emissions does not constitute a silver bullet that will eliminate the threat. Equally important are strategies that: (1) Address the 50 percent of emissions that cap-and-trade will not reach; and (2) Reduce greenhouse gas emissions far faster than caps can.

Silver buckshot strategies: (1) Produce incremental solutions; (2) Aggregate many small gains; and (3) Secure immediate greenhouse gas emission reductions.

Small Wonders describes a treasure trove of silver buckshot initiatives. The report focuses on what small firms can actually do on their own to reduce their emissions and usually their energy costs as well. It describes numerous up-and-running, successful small business silver buckshot models that are available for widespread replication.



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.

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.

The *Energy Independence and Security Act of 2007* also created a priority status within the Small Business Innovation Research 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 first and 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 website 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.

WHAT’S NEXT?

MOBILIZING A NEW PRO-BUSINESS, PRO-ENVIRONMENT POLITICAL CONSTITUENCY

Small Wonders amply demonstrates 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?

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.

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 website. This network will address the needs and concerns of green entrepreneurs as small businesses.

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

The website 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 website 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.

CSBE

www.smallwondersreport.org

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

