

New Technologies and New Ideas Are Exploding onto the Scene

There are dozens of great new ideas being hatched on how to move the world away from fossil fuels and toward the endless and clean supply of energy from the sun and the wind— or from waste, or from other sources. We will tell you about some of them in this issue, but only those that we think are notable and have potential.

The criteria we used to identify the ideas we have included are 1) the potential to be adopted on a large scale (i.e., useful in many parts of the country or for many different types of applications); 2) the win-win factor, or those that are solving more than one problem through their development; and finally, 3) a cleverness factor.

Rentricity, a New York company, describes itself on its web site as, "... a renewable energy company that uses unique energy recovery configurations to transform the untapped energy in various man-made processes into electricity." One of their energy recovery systems converts excess pressure in water mains and other similar pipes into clean electric power. A typical system produces between 20 and 300 kilowatts of electricity. This electricity can then be sold back to the power company via the grid. Rentricity gives its "generating partners" an additional source of revenue, offsetting their electricity costs.

Marine Current Turbines, an English company, is partnering with a Canadian company to install a 1.5MW tidal generator that will be tied to the Nova Scotia grid.



The SeaGen tidal turbines generate power from sea currents. The high density of seawater compared to wind allows for a much smaller system.



The yellow feature in the first photo is the Rentricity innovation that captures excess pressure in water systems and converts it into power. The middle photo shows the electrical tie-in. The final photo shows the finished application of the new technology.

Entech Solar, a Texas Company, has developed the ThermoVolt™ system that produces both electricity and thermal energy. The system's ability to convert sunlight into two useful energy forms provides three to four times the energy of stand alone photovoltaic systems.



The cost of the ThermoVolt™ system is lower than other solar energy collection systems due to the 95% reduction in the amount of silicon required.

Sorting Out What to Do Now

So, the price per barrel of oil has been under \$40 off and on for a while now. Whew! Right? Wrong! With the exception of the short-term relief this buys individuals and businesses that were truly unable to sustain themselves under the stress of the meteoric rise in fuel prices we experienced during 2008, cheap oil can lure many back into the oil dependent ways of the past.

What we, as a nation and as individuals, do now is critical. We must not allow the old patterns of the past to occur again. Typically we go through the following:

crisis⇒

discussion of conservation and alternative energy⇒

halfhearted movement away from fossil fuels⇒

Followed by:

reduced prices (i.e., because oil producing countries increase production or the current recession)

or

acceptance of the new “normal” of higher energy prices.

Seize the Opportunity that Cheap Oil Provides

The federal tax per gallon on gasoline went into the general fund from 1932 to 1956. From 1956 to 1982 the gas tax proceeds were directed into a Highway Trust Fund. In 1982 Congress increased the federal gas tax from four cents to nine cents per gallon and dedicated one cent (20% of the increase) to a Mass Transit Account.

Since then, each time Congress has increased the federal gas tax, 20% of the increase has been dedicated to the Mass Transit Account. Increases have occurred in 1990, 1993 and 1997; the current tax is 18.4 cents per gallon of gasoline. Only 2.86 cents are diverted away from the Highway Trust Fund to the Mass Transit Account. A very tiny amount, .1 cents per gallon, is diverted to a fund dedicated to the clean up of leaking underground storage tanks (e.g., the type used to hold gasoline at service stations).

We now have the chance to utilize some of the difference between what we are paying at the gas station and the level at which the price is too burdensome for too many during this period of economic stress. All of this money could be invested in alternative fuel research, and more importantly, implementation of projects that would reduce our dependence on fossil fuels.

Allow Old Habits to Die Quietly

Refuse to revert to more driving, putting off replacing gas-guzzlers, turning up the heat, not bothering to draw the drapes at night, etc. Instead, focus on ingraining your new habits of resourceful living. Bank the money saved due to both driving less and paying less at the pump—or pay off outstanding bills more quickly.



Resist driving more just because current prices have dipped to five-year lows. Once we consume a gallon of fuel, that gallon is gone forever. Oil is a finite resource. Continue to use public transportation, combine trips in the car and anticipate reducing the number of vehicles in your household and replacing your primary vehicle with a more efficient one.



Make Conservation the Number One Priority

While it can't take care of all of our needs, energy conservation is by far the cheapest, easiest, and quickest way to positively impact climate change, your bank account, your health and the planet's well being. Read the impressive history of energy conservation projects and accomplishments from an unexpected place: Dow Chemical's Louisiana Division.

On the Climate Progress website, its editor, Joe Romm, writes of the program implemented in 1982 that established a yearly contest to identify and fund energy-saving projects. The Division included 20 plants and in its first year, there were 27 winning projects. In that first year Dow spent \$1.7 million and averaged a 173% return on their investment. In 1983, \$2.2 million was spent on 32 winning projects with a 340% return. The most important message of the article is not even the terrific rate of return though; it is the endless opportunities that continued to be identified and result in reduced energy use. Among the many noteworthy points in the article two are provided below:

“Anyone would predict that after 10 years, and nearly 700 projects, the 2000 employees would be tapped out of ideas. Yet the contest in 1991, 1992, and 1993 each had in excess of 120 winners... Total savings to Dow from the projects of just those three years exceed \$75 million a year.” [emphasis added]

“Far from instantly spreading throughout the chemical industry, Nelson's techniques have hardly even spread through Dow. Worse, in 1993, Nelson retired; reorganization wiped out his coordinating committee; and any continuing efforts can no longer be tracked.”

The bottom line then is that we have not scratched the surface regarding the potential improvements that we can make throughout society via conservation.

What About the Picken's Plan?

One loud voice in the mainstream media that is working hard to combat the inertia of temporarily lower energy prices is T. Boone Pickens. An oilman from the old school, Pickens is uniquely qualified to speak to energy issues.

He has pledged to spend billions of dollars of his own money to fund wind energy projects and has engaged in an aggressive campaign to raise awareness about our need to

“get off foreign oil”. He has been criticized by some for including natural gas development in the U.S. as a part of his plan. This would benefit him financially, but is also a realistic “bridge” option for accelerating the shift away from imports; would enrich U.S. companies rather than foreign ones; and natural gas is a much cleaner burning fossil fuel than either oil or coal.

He is honest about the forces working against displacing oil and coal use in the U.S. and he addresses the issue of temporarily lower fuel prices and the disastrous effect it can have if it results in cancelled projects. Similarly, he supports the new administration's desire to fund alternative energy development as both an economic stimulus and because it is essential to national security. Finally, he is a man in a position to address his old peer group. They are people who have a vested interest in the status quo and will not be easily swayed to make more than cosmetic changes designed to address public perception issues rather than fundamentally change the sources of energy available to our country. The Plan and the Plan's website are designed to encourage mass participation, so check into it to learn what he is doing. Go to: <http://www.pickensplan.com/theplan/>

So, what are the other titans of industry doing to help us move away from our dependence on fossil fuels? Many are saying what is popular in an effort to sound as though they are buying into the “green” movement, but only a handful are making efforts that are wide and deep.

This month the 5th Annual CLEAN-Tech Investor Summit was held in Palm Springs, California. On the surface this was a high-end version of the run-of-the-mill industry conference complete with display tables, goodie bags, and lots of feverish networking. Despite the apparent ordinariness of this event in the face of extraordinary times, really the fact that the event exists at all, and is in its fifth year is quite spectacular.

Coal: Some Data to Consider

In 2007 there were 1,859 different coal mines operating in the U.S. These mines employed 81,278 people, produced the coal that was used to provide more than half of the electricity used in this country, and filled more than 40% of rail cars moving around North America (the second largest single commodity moved by train is only about 8% of the material moved). Will the coal and rail industries behave any differently than “big oil” in refusing to release their grip on their respective interests? Not likely!



Interconnectedness (in'ter ke nek'tid nis), n. the quality or condition of being interconnected; interrelatedness; the interconnectedness of all nations working toward world peace. [1920-25; INTERCONNECT + -ED + -NESS] From the Random House Dictionary of the English Language, Second Edition, Unabridged.

Concerns with the economy and job creation are valid but must not be solved in a vacuum that ignores the impact our way of life has on the world around us. "Putting people back to work" and "shopping" without being mindful of how we do this will only deepen our environmental, energy and economic problems. The recession buys us several things. It buys us resources that would have otherwise been consumed already. It buys us an opportunity to identify innovative projects that can be tested on a small scale that might have otherwise been ignored in a booming economy. It buys us bargains because it lowers expectations on returns on investment and therefore projects with a smaller rate of return may be funded. Finally, it buys us an appreciation for what we have instead of looking forward to the next "want".

If we are lucky and have a job, a place to live, some money in the bank, and our health, we can "count our blessings" and then turn our attention outward to all of the good work that needs to be done. Two thinkers, both of them Berrys, wrote eloquently about needs, wants, and what work we all can and, they would say, must do. Wendell Berry and Thomas Berry are not related, but they have similar backgrounds, are of the same era, and both have words of wisdom that we would all be better off considering. In a review of *The Great Work*, Thomas Berry is described as, having a message that "is not one of doom but of hope. He reminds society of its function, particularly the universities and other educational institutions whose role is to guide students into an appreciation rather than an exploitation of the world around them. Berry is the leading spokesperson for the Earth, and his profound ecological insight illuminates the path we need to take in the realms of ethics, politics, economics, and education if both we and the planet are to survive." Wendell Berry is credited with writing that the good life includes sustainable agriculture, appropriate technologies, healthy rural communities, connection to place, the pleasures of good food, husbandry, good work, local economics, the miracle of life, fidelity, frugality, reverence, and the interconnectedness of life. The threats to the good life he described include: industrial farming and the industrialization of life, ignorance, hubris, greed, violence against others and against the natural world, the eroding topsoil in the United States, global economics, and environmental destruction.

Something to Think About



The Department of Energy's Energy Information Administration, (EIA) issued a report on the Electric Power Industry on January 21 2009. Reporting on 2007 data, the report said that, "In 2007, for the first time, renewable energy sources, other than conventional hydroelectric capacity, accounted for the largest portion of capacity additions." Simply stated, this means that in 2007 the incremental increase in U.S. power generation was from renewable sources other than hydroelectric dams. The report states that the largest renewable energy source contributing new capacity was wind energy.

A Good Book...

or two... In this issue we are recommending two books—or rather two authors. During this period of great change and even greater challenges we expect that more time might be dedicated to reading and thoughtful consideration of what is important and what we can do, for the greater

good. Energy Shift recommendations: *The Way of Ignorance and Other Essays* by Wendell Berry and *The Great Work* by Thomas Berry.

Energy Shift wants to help you put words into action. Begin your own personal energy shift! If you are already well on your way, share these ideas with others. Sometimes the best way to help someone get started is to give him or her something useful (like a cloth shopping bag or insulated outlet cover) instead of simply talking about making a change.

Place your orders by using the Energy Shift web site, www.energyshift.us or place your order by U.S. mail to:

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