

Finding new sources of energy

Stimulus money boosts green businesses

By Ann Haver-Allen
Earth Odyssey Editor

The United States is a nation of consumers and our capitalistic economy functions, to a great degree, because of the driving desire to consume. Nowhere are we bigger consumers than in our insatiable appetite for energy.

The Web site NationMaster.com reports that the United States consumes almost 4 trillion kWh of electricity annually, ranking it as the number one electricity consumer among 210 nations.

The United States is the number one consumer of natural gas, nuclear energy and oil. Additionally, we hold the title of most energy usage per person in the world—and usage continues to increase.

In May 2009, the Energy Information Administration (EIA) released its Renewable Energy Annual, 2007, which reported that between 2006 and 2007, U.S. energy consumption increased 2 percent to almost 102 quadrillion BTUs (see pie chart titled Renewable Energy Consumption).

Natural gas consumption was the fastest growing segment of the nonrenewable energy uses, and now accounts for 23 percent of the nation's energy consumption.

Petroleum claims the lion's share of energy consumption at 39 percent, followed by coal at 22 percent. The United States is not the world's number one consumer of coal, according to NationMaster.com—we come in second of 41 nations for that honor.

The EIA reports that nuclear electric power accounts for 8 percent of the U.S. energy consumption and all renewable sources combined account for only 7 percent of the nation's power usage.

Of that 7 percent renewable energy slice, only 1 percent is produced by solar (see chart above). The potential for growth is phenomenal.

Interestingly, in Arizona—the state with the most abundant sunshine in the United States—the production of solar energy is negligible. The state does, however, use a much greater percentage of coal.

In fact, 36 percent of Arizona's electricity is generated by coal. That's down from almost 44 percent in 1997. But that decline does not mean the state turned to renewable energy sources.

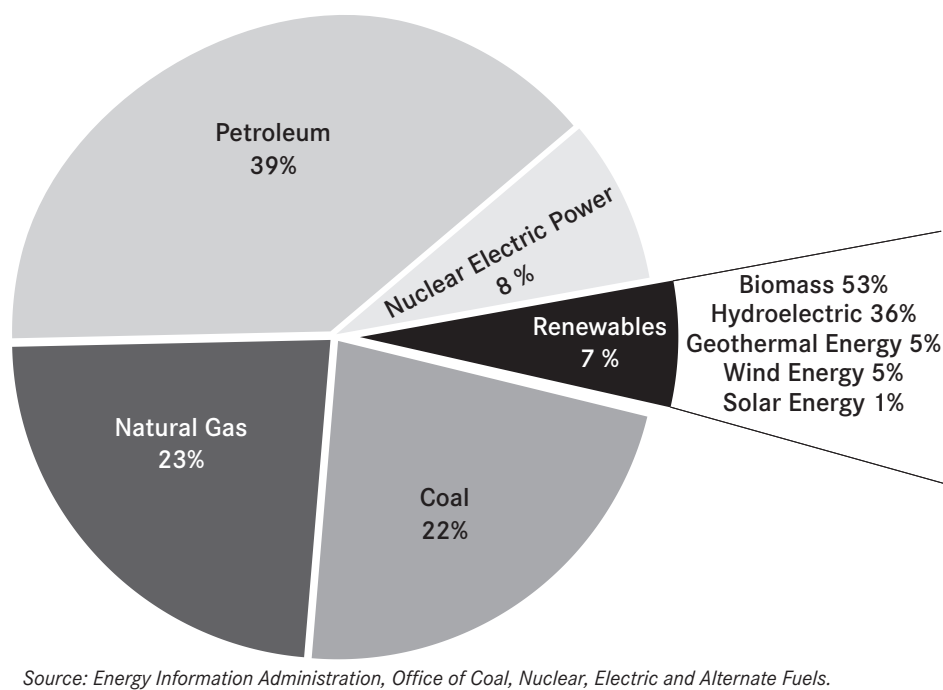
Rather, just like the national trend, Arizona turned to natural gas, which in 1997 accounted for only 3 percent of the state's electricity. In 10 years, the natural gas percentage has jumped to almost 34 percent (See table 1 titled Electric Power Generation above, right).

While natural gas may be a cleaner source than coal for generating electricity, it is still a nonrenewable source.

Few people—other than *Earth Odyssey* readers—contemplate the idea of reducing their energy usage or entertain the prospect of switching to all renewable energy sources.

Renewable Energy Consumption in the Nation's Energy Supply, 2007

• Overall Total = 101.545 Quadrillion BTU • Renewables Total = 6.813 Quadrillion BTU



Moving toward renewable energy, however, is one of the key initiatives of the current U.S. Administration.

The transition from nonrenewable energy to renewable sources will likely rival the industrial revolution. Jobs, skills, industry and the economy will all have to shift to a new model and that process is likely to be painful and expensive, but smarter for our planet.

The Obama Administration is pumping millions of dollars into the economy to bolster the creation and development of "green-collar" jobs in a new economy that will ultimately be significantly less dependent on nonrenewable energy sources.

Almost daily, the news reports of millions of stimulus dollars being released: \$10.5 million in solar energy education for local governments; \$32 million to expand hydro-power; \$300 million to boost carbon capture, solar energy and high gas mileage cars and trucks; and \$3 billion to develop renewable energy projects nationwide.

Those efforts are not without critics and many of the harshest comments have come from Arizona's representatives—a state that obtains 94 percent of its electric power from coal, natural gas and nuclear sources (see table titled Electric Power Generation above).

In July, Republican Senator Jon Kyl called President Obama's economic recovery plan ineffective, and wrote on his Senate Web site that the government should "cancel the rest of the stimulus spending."

The Obama Administration responded by "offering" Governor Jan Brewer the option of canceling the state's share of stimulus funding.

That offer resulted in accusations from Kyl, joined by Senator John McCain, that the administration was "threatening and bullying" the state.

"I strongly support the comments of Senator Kyl and call on the administration to retract its threat against the citizens of Arizona," McCain said. Which horse do we really want to ride?

That initial furor has quieted, but it provided a small dust-up of the unpleasantness that is always just below the surface when big powerful industries are faced with extinction.

Arizona Solar Power LLC
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877-496-0167, toll free
www.sunpowerarizona.com
Young Ho Kim, Jana Stock and Jack Stock, owners

Arizona Solar Power provides quality products at competitive prices. Arizona Solar Power is the SunPower dealer in northern Arizona. SunPower panels are the most efficient panels in the world.

Arizona Solar Power provides a 10-year warranty on all products, as well as on installation. Arizona Solar Power provides a power warranty for 25 years. The SunPower panels typically last 50 year or more.

Young Ho Kim said the economy has not impacted their business at all.

"This is a new, growing field," he said. "The growth rate far exceeds that of any slowdown rate."

Arizona Solar Power is currently opening a new office in Scottsdale, and is opening one office each month.

He said Arizona Solar Power has experienced some benefit from the economic stimulus package.

"We have seen an increase in government

Table 1
Electric Power Generation in Arizona as Percentages

Source of electricity	1997	2007
Coal	43.7	36.4
Petroleum	0.1	NA
Natural Gas	3.2	33.9
Nuclear	37.2	23.6
Hydroelectric	15.3	5.8
All Other Renewables	0.1	NA
Pumped Storage	0.4	0.1

Source: Energy Information Administration, Form EIA-923, "Power Plant Operations Report."

It's true that the United States does have an abundance of energy, but it needs to make more concerted efforts toward renewable sources and stop the raping and pillaging of Earth to extract nonrenewable materials.

Which is a bigger eyesore: an open pit coal mine or windmills in a wheat field?

Which is more harmful to the Earth and its inhabitants: an oil or natural gas field or an array of solar panels?

Which pollutes our planet less: uranium mining to support a nuclear plant or individual rooftop solar collectors?

The fact is that electricity generation from renewable energy sources has declined over the past 10 years, while reliance on nonrenewable sources has increased and that's just the opposite of what should be happening.



orders," Young Ho said, and they are particularly excited about the increased Federal tax limit and the state tax credit for installation of solar systems.

"The Federal tax credit limit has been increased and state tax credit limit of \$2,000 has been changed to 10 percent of the system cost," he said. "This greatly increased the amount of credit that can be used."

Young Ho said he is very optimistic about the future.

"This field is just beginning," he said. "With government promoting alternative energy, the future looks very bright."

Arizona Solar Power is the largest solar sales and installation company in Northern Arizona. Young Ho said they provide quality products and quality service locally. Arizona Solar Power services all its areas with local offices.

Renewable energy

The Obama Administration talks of the “clean energy revolution” and making a “transition to a clean energy economy.” The change is about more than money. It’s implementing new energy conservation standards for commercial and residential buildings, as well as increasing the pace of energy conservation standards for appliances.

“One of the fastest, easiest and cheapest ways to make our economy stronger and cleaner is to make our economy more energy efficient,” President Obama said. “By bringing more energy efficient technologies to American homes and businesses, we won’t just significantly reduce our energy demand, we’ll put more money back in the pockets of hardworking Americans.”

The Administration has announced new standards for lighting intended to reduce electricity use by 15 percent and the use of incandescent lamps by 25 percent. Another objective is to have all buildings at least 80 percent more efficient—or even become “net zero” energy buildings with the incorporation of on-site renewable power generation.

The Department of Energy released more than \$454 million to 18 states in the end of June that will be used for a wide variety of renewable energy and energy efficiency programs, including state programs offering grants, loans, energy audits, education and training. Arizona is one of the beneficiary states.

Additionally, the Department of Labor launched five grant competitions, totaling \$500 million, to fund projects that prepare workers for green jobs in the energy efficiency and renewable energy industries.

Solar

When it comes to solar energy, no state in the United States has a greater abundance of sunshine

than does Arizona.

Unfortunately, however, it’s an abundance that is not being harvested.

Arizona has a total of 25.3 MW grid-tied photovoltaic capacity, while neighboring California has 530 MW, according to the U.S. Solar Industry Year in Review 2008 report from the Solar Energy Industries Association.

Even New Jersey, which has one-third the sunshine, has almost three times the photovoltaic capacity (see table 2 titled Grid-tied Photovoltaic Capacity Comparison, page 8).

In conjunction with the Solar America Cities program, the Department of Energy has launched a measure to increase the ability of local governments to accelerate solar energy adoption and workforce development.

Local governments can obtain up to \$10.5 million for green jobs training and economic development through support of the local solar industry and financial incentive programs to help citizens make investments in solar energy.

Applications for the grants are due by Oct. 15. For more information, see the Solar Energy Technologies Program Financial Opportunities Web page at www1.eere.energy.gov/solar/financial_opportunities.html. Select the Current Opportunities button on the left.

The Solar Energy Industries Association reported that grid-tied photovoltaic capacity increased 58 percent in 2008 and solar water heating capacity increased 40 percent.

“Many companies report that, while consumers continue to express interest in solar, concerns about personal finances and tight credit have reduced sales,” the Solar Energy Industries Association reported.

The Association’s report states that the U.S. solar industry “grew to new heights in *See Stimulus, page 8*

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<http://store.solar-electric.com/>

Northern Arizona Wind and Sun Inc. is a family-owned business that has been selling and installing solar electric systems and components full time since 1979. The family has been in Arizona since 1885 and many of their first projects were installing 30-watt solar panels on hogans on the Navajo reservation, where the nearest power line was often 50 miles away, and so was the nearest paved road. The company was incorporated in 1984 and sales have grown steadily over the past few years. Northern Arizona Wind and Sun Inc. is now one of the largest solar retailers in the United States.

David Lauzon, sales and system design for Northern Arizona Wind and Sun, said sales were really busy in January and February, but slowed about 50 percent in March and April. June and July rebounded and have been very busy.

“Overall, we are doing better this year than last year,” Lauzon said. “In this economy, solar is the place to be.”



Lauzon said Northern Arizona Wind and Sun has not seen a significant increase in sales due to the stimulus package at this point, but with the solar rebates offered by the utility companies and the 30 percent Federal tax credit, he expects sales to increase by 50 percent.

Lauzon said Northern Arizona Wind and Sun expects to be doing very well in the near future.

“With the power grid failing and so much talk about going green, we have seen a significant increase in new customers,” he said. “We have installed thousands of systems in Arizona and have provided equipment to millions of customers around the world. We plan to keep renewable energy as affordable as possible to help the environment and our customers.”

High Desert Rain Catchment
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MacRae and Margaret Nicoll (siblings)

High Desert Rain Catchment strives to help people take control of their personal water supply by reducing dependencies on aquifers, pipelines and politics. Decentralizing the water system will provide a safe, effective and sustainable water supply to everyone. High Desert Rain Catchment works to educate the public about the importance of collecting rainwater and to design and install high-quality, long-lasting rainwater harvesting systems that are based upon point-of-source production principles.

Owners MacRae and Margaret Nicoll said the economy has affected their business because people are holding onto their money and are being very careful about where they spend it.

“On one hand, they want to invest in their futures and in the sustainability of their land, but on the other, it is difficult to make large investments when you don’t know when the economy is going to turn around,” Margaret Nicoll said. “Many people tell us that they would love to install the systems, they just need to wait until they have a little more security. Additionally, the economy has affected our cost of goods, which in turn makes things more expensive for everyone.”



Nicoll said that High Desert Rain Catchment has not necessarily seen any benefit from the stimulus package.

“Contracts for the stimulus money are so competitive right now that it is difficult for the small business to compete.”

She believes the new law in Tucson requiring all new commercial buildings to use rainwater for 50 percent of their water outdoor use and an Arizona tax credit for 25 percent—up to \$1,000—for the cost of installing a rainwater catchment system will help business.

Additionally, the City of Prescott passed a 10 cents per gallon storage incentive program for rainwater harvesting, which will help municipal water users.

Nicoll said she is optimistic about the future.

“It is so important to stay positive and continue to move forward despite a poor economy,” she said. “We are here to empower and help people reduce or eliminate their water bills while recharging the local aquifer.”

RINGING rocks Foundation



Global Wisdom Conservancy



EVENT

Tom Earl Pela
Traditional Hopi Healer
Aug 14th, 7:00 pm - Free

Tom Earl Pela was born in Phoenix, Arizona in 1979 and was raised on the Hopi Reservation in the village of Hotevilla on Third Mesa. At an early age, his great grandfathers David Monongye and Earl Pela recognized his gifts of healing and mentored him for many years. He was initiated into the Bear Clan Medicine Society on Second Mesa. This medicine society is one of the oldest found within the Hopi culture. It invokes the spirit and strength of the bear to guide the healer through the various healing techniques handed down to initiates by their Elders for centuries.

*Seating is limited, reservations required, call 282-1298
Donations are gratefully accepted.*

Ringing Rocks Foundation

conserves indigenous healing practices and cultural traditions, through education, documentation, and grassroots partnerships.



The Healing Nautilus is a unique exhibition of blessings by indigenous healers from around the world.

Exhibition includes:



Jero Mangku

The exhibition and gift shop are open
Mon - Sat 10 am - 5 pm.
Admission is Free.

Ringing Rocks

3190 W State Route 89A
at Dry Creek Rd.

(928) 282-1298

www.ringingrocks.org

Table 2

Grid-tied Photovoltaic Capacity Comparison (MW-dc)

State	Installed in 2008	Cumulative
California	178.6	530.1
New Jersey	22.5	70.2
Colorado	21.6	35.7
Nevada	13.9	34.2
Arizona	6.4	25.3

Source: US Solar Industry Year in Review 2008 (www.SEIA.org)

Direct Comparison of Two States

State	Annual Precipitation	Number of days with measurable precipitation	Number of days with sunshine
New Jersey	43-51 inches	108-144	Not available
Arizona	13 inches	15-70	292-314

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2008” and solar energy now provides electricity and hot water to more than 100,000 homes, businesses and utilities in the United States.

While that’s all good news, it’s not even a big drop in the bucket when considering that there were 129.8 million homes in the United States last year. It’s definitely a step in the right direction, but the road ahead is a long one.

“For the next 10 to 15 years, the only feasible and scalable options for carbon-free energy generation will be solar and other ready-to-deploy renewable technologies such as wind,” reported the Solar Energy Industries Association.

Changes in the federal tax laws will help businesses and individuals make the switch to renewable energy.

Those changes include: extending the 30 percent investment tax credit for eight years, lifting the cap for residential photovoltaic installations and allowing tax credits to be

applied against the alternative minimum tax.

An additional boost came early in July with the renewable energy program, which will provide direct payments in lieu of tax credits in support of biomass, solar, wind and other types of renewable energy production. This direct-payment program will allow for an immediate stimulus in local economies.

Wind

In 2008 the United States was the fastest-growing wind power market in the world for the fourth consecutive year. Wind power accounted for 42 percent of all new electric generating capacity and the United States has now officially overtaken Germany as the world’s top wind energy generator.

In all, wind energy generating capacity in the United States now stands at 25,170 MW, producing enough electricity to power the equivalent of almost 7 million households—or roughly 1.9 percent of the nation’s electricity consumption.



skyrocketed,” Koch said. “We are twice as busy this year as we were last year.”

He said Technicians for Sustainability is seeing direct benefits from the economic stimulus package.

“The provisions for a U.S. treasury grant in lieu of tax credits for commercial systems is beginning to make systems possible for business owners who could not previously install systems,” he said.

Technicians for Sustainability is optimistic about the economic future for business.

Technicians for Sustainability

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Technicians for Sustainability designs and installs commercial and residential solar electric systems, residential solar hot water heating and rainwater harvesting systems. The company is committed to offering superior quality products and workmanship and is driven by a desire to implement sustainable energy technologies in southern Arizona and in its own operations.

Kevin Koch, a certified photovoltaic installer with Technicians for Sustainability, said business is skyrocketing.

“With people concerned about rising monthly expenses and finding a safe investment in these turbulent economic times, interest in solar energy systems has

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Catalyst Architecture is an award-winning, full-service sustainable design firm located in Prescott. Catalyst specializes in master planning, public/tribal, commercial and custom residential work, with an emphasis on Earth-friendly design and caring client relationships.

Both principals Jeffrey L. Zucker and Matthew B. Ackerman are LEED accredited and are passionate about high-performance design and committed to the thoughtful integration of natural and built environments.

For Catalyst Architecture, business is booming.

“We are the busiest the we have ever been, due to a 36-year commitment to sustainable practices,” Ackerman said. “We recently signed a large contract for a \$9.8 million facility in California for the U.S. Fish & Wildlife Service. As a result,

The top five states in terms of current capacity installed are:

1. Texas, with 7,116 MW
2. Iowa, with 2,790 MW
3. California, with 2,517 MW
4. Minnesota, with 1,752 MW
5. Washington, with 1,375 MW

Wind power’s recent growth has also accelerated job creation in manufacturing, with the share of domestically manufactured wind turbine components having grown from less than 30 percent in 2005 to about 50 percent in 2008.

Wind turbine and turbine component manufacturers announced that they added or expanded 70 facilities in the past two years, including more than 55 in 2008 alone. Those new manufacturing facilities created 13,000 new direct jobs in 2008.

In July, 28 new wind energy projects were selected to receive up to \$13.8 million in stimulus funding.

These projects will help address market and deployment challenges, including wind turbine research and testing, transmission analysis, planning and assessments.

“Wind energy will be a critical factor in achieving the President’s goals for clean energy while supporting new jobs,” said U.S. Department of Energy Secretary Steven Chu. “While the United States leads the world in wind energy capacity, we have to continue to support research and development as we expand renewable energy deployment.”

Water

Unlike sun and wind, water is a commodity that is not so plentiful in Arizona, although the damming of the Colorado River at both Northern corners



we have hired new people, purchased new equipment and enlarged our work space.”

Ackerman said they are particularly encouraged by the specific legislative references to green industry, green construction and development practices that are incorporated in various components of the stimulus package.

“This is the kind of true leadership that is/has been desperately needed,” he said. “I am hopeful that this current interest in the environment is more than just a ‘flash in the pan.’”

Ackerman said that, as a business, Catalyst Architecture is committed to the concepts of activism, education and outreach.

“This is demonstrated in our company’s bi-monthly newsletter, The Sketch Pad, available online at http://catalystarchitecture.com/Sketch_Pad.html.”

does result in the production of hydroelectric power.

Twelve years ago, the state obtained 15 percent of its electricity from hydroelectric sources. In 2007, that percentage had dropped to just less than 6 percent (see table titled Electric Power Generation, p.6).

As part of the Recovery Act, \$32 million in funding was released to modernize the existing hydropower infrastructure in the United States, increase efficiency and reduce environmental impact.

Secretary Chu said that hydropower is clearly a part of the nation’s solution to the energy crisis.

“Investing in our existing hydropower infrastructure will strengthen our economy, reduce pollution and help us toward energy independence,” he said. An additional benefit of hydropower, he added, is its stability—hydropower is available when sun and wind may not be.

More information

For more detailed information on any of the Recovery Act provisions introduced in this article, see www.energy.gov/recovery/index.htm.

- For information on federal tax incentives, see www.irs.gov. Enter Energy Tax Incentives in the search box.
- The Database of State Incentives (www.dsireusa.org) provides current information by state, municipality and utilities.
- Recovery.gov outlines the Recovery Act funding across all federal program areas.
- Energy Star offers consumer information and federal tax incentives for energy efficiency and renewable energy can be found at www.energystar.gov. In the search box, enter Tax Incentives.