

ENVIRONMENTAL SYNOPSIS

The Chairman's Corner

Rep. Scott E. Hutchinson, Chairman



A recent New York Times article spoke about the future of the biomass fuel industry in general and the wood pellet fuel industry in particular. The article painted a pretty rosy picture for wood pellets, citing a fairly new European market and tax credits available from the American Recovery and Reinvestment Act (ARRA). ARRA offers a tax credit of up to \$1,500 for installation of a 75 percent efficient biomass stove, a level of efficiency easily available from wood pellets and wood pellet stoves, as well as biomass fireplace inserts, furnaces and boilers.

Pennsylvania would seem to be in a good position to be a "player" in the wood pellet industry, given the state's stands of hardwood forests, its sustainable forestry initiatives and its active wood products industry.

A recent study conducted by Penn State's School of Forest Resources and its Agricultural and Biological Engineering Department notes that Pennsylvania has 13 wood pellet manufacturers that consume the equivalent of close to one million green tons of wood chips and sawdust annually. Actual production is estimated at about 400,000 tons annually, with another 100,000 tons expected to go on line in 2010.

Pennsylvania is also home to the world leader in pellet stoves, Halifax, PA-based Harman Home Heating. Harman has over 30 years of experience in the industry, and while it manufactures a number of biomass-burning stoves, is most widely known for its patented, award-winning pellet stoves, which are sold across the nation and the world.

On the national scale, the Pellet Fuels Institute states that there are approximately one million pellet stoves and fireplace inserts used in homes throughout the U. S. and Canada, more than 80 mills in North America producing in excess of three million tons of fuel per year, and more than 23 manufacturers of pellet appliances.

The Times article noted, "...Europe's rapidly growing appetite for biomass fuel..." was the impetus for the beginning of construction of one large pellet plant and plans for another sizable plant, both in Arkansas.

According to some in the Pennsylvania pellet business, however, the article was overly optimistic, at least in the immediate time frame.

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NOTES FROM THE DIRECTOR

CRAIG D. BROOKS, EXECUTIVE DIRECTOR



The American Recovery and Reinvestment Act of 2009 (ARRA) included a tax credit for investments in manufacturing facilities for clean energy technologies. The Section 48C program will provide a 30 percent tax credit for investments in 183 manufacturing facilities for clean energy products across 43 states. The tax credit program was created to help build high technology, U.S. manufacturing capacity to supply clean energy projects with U.S. made parts and equipment. These manufacturing facilities are also supposed to support significant growth in U.S. exports of U.S. manufactured clean energy products.

The \$2.3 billion in tax credits is being allocated on a competitive basis. Projects are assessed based on the following criteria: commercial viability; domestic job creation; technological innovation; speed to project completion; and the potential for reducing air pollution and greenhouse gas emissions. The Department of Energy (DOE) also considered additional factors such as diversity of geography, technology and project size, and regional economic development.

The program is currently capped at \$2.3 billion in tax credits and was oversubscribed by a ratio of more than 3 to 1, which may be an indication of increasingly high quality, clean energy manufacturing opportunities in the U.S. The intent in offering these tax credits for clean energy manufacturing is to help build domestic manufacturing and encourage private capital investment.

The DOE has estimated that ARRA investments of up to \$2.3 billion for advanced energy manufacturing facilities will generate more than 17,000 jobs. The DOE further estimates that this investment will be

matched by as much as \$5.4 billion in private sector funding, which would support 41,000 additional jobs.

The qualifying manufacturing facilities included the production of a wide range of clean energy products:

- Solar, wind, geothermal or other renewable energy equipment;
- Electric grids and storage for renewable energy;
- Fuel cells and microturbines;
- Energy storage systems for electric or hybrid vehicles;

- Carbon dioxide capture and sequestration equipment;
- Equipment for refining or blending renewable fuels;
- Equipment for energy conservation, including lighting and smart grid

technologies; and

- Plug-in electric vehicles or their components, such as electric motors, generators and power control units.

According to DOE, because the 48C program generated far more interest than anticipated, DOE and the U.S. Treasury Department have a substantial backlog of technically acceptable applications. Instead of turning away worthy applicants who are willing to invest private resources to build and equip these facilities, Congress has been asked to provide an additional \$5 billion to expand the program.

The statute authorizing the 48C tax credit mandates that projects must be commissioned before February 17, 2013 but favors the selection of projects that are in service early. As a result, some of the selected projects already have been completed and have begun operation.

There were far more applicants than funding available under the tax credit program, so Congress has been asked to increase funding

RESEARCH BRIEFS

Each month, the committee's staff researches and prepares a number of "briefs" on several topics relevant to the Joint Conservation Committee's mission. Very often, these briefs include references to reports and further research on the topics so that readers may pursue issues on their own.

Wind Could Power 20 Percent of United States' Eastern Grid by 2024

-- Tony M. Guerrieri, Research Analyst

A report from the National Renewable Energy Laboratory (NREL) states that wind power could supply 20 percent of electricity demand for households and businesses in the eastern half of the U.S. by 2024, **if** a large overlay of new transmission lines is built and grid operations are reorganized to share wind energy widely across the region.

NREL is part of the U.S. Department of Energy, and its report, "*Eastern Wind Integration and Transmission Study*", comes after more than 2.5 years of analyzing the economic, operational and technical implications of high penetration scenarios about future wind development.

The research focused on the Eastern Interconnection, one of the country's three major power grids. The Eastern Interconnection stretches as far west as Arkansas and Montana and extends through the Atlantic coast, excluding most of the state of Texas, which is already heavily dependent on wind. More than 70 percent of the U.S. population receives its electricity from the Eastern Interconnection.

According to the report, supplying 20 percent of the electric requirements of the Eastern Interconnection would call for approximately 225,000 megawatts (MW) of wind generation capacity, about a tenfold increase above today's level. One MW of electricity can provide power to about 1,000 homes.

Three scenarios assumed that wind provides 20 percent of the electricity supplied in 2024 in the Eastern Interconnection. In scenario one, the 20 percent target is met primarily by moving energy (95,000 MW) from high-quality wind resources in the Great Plains across the Midwest to the East Coast.

The second scenario (a hybrid with offshore sources) would move some wind generation in the Great Plains eastward, closer to areas with higher populations. The NREL report assumes that 16,600 MW of wind generation is built offshore, most of it

between New England and North Carolina, with a smaller contribution in the Great Lakes.

A third 20 percent scenario assumes an "aggressive" offshore development adding 64,000 MW of generation, more than half of it off the mid-Atlantic coast, and 11,400 MW off New England's coast. Wind generation in the Midwest drops by half, to just over 46,000 MW, under the third scenario, and by nearly half in the Southwest Power Pool. Offshore wind is significantly more expensive, the report suggests.

Construction, consolidation and reorganization are called for in all the scenarios

The NREL report assumes that between 17,050 and 22,697 miles of new transmission lines would have to be built, depending on the scenario (the offshore wind models require less transmission). The transmission overlay for scenario one has the highest estimated cost at \$93 billion.

The NREL report assumes that a large-scale consolidation of grid control organizations would occur, in order to permit the widest possible sharing of wind power across the eastern grid. Scenario one calls for eight major transmission lines crossing Pennsylvania and several other states. In scenario three, the number of long-haul lines from the Midwest is cut roughly in half.

All the scenarios assume that the wind generation will be built and that most of the wind energy will reach consumers, displacing coal- and gas-fired generation sources. Regardless of where the wind turbines are built, the projected global warming benefits are modest. The 20 percent scenarios would reduce carbon emissions by nearly five percent in 2024, the report said.

The NREL's 245-page report, "*Eastern Wind Integration and Transmission Study*", and a 45-page Executive Summary are available at: <http://www.nrel.gov/wind/systemsintegration/ewits.html>.

Nuclear Renaissance Promising But Faces Some Hurdles

-- Craig D. Brooks, Executive Director

The U.S. Department of Energy (DOE) has been authorized to provide \$18.5 billion in federal loan guarantees to support the first large-scale construction of new commercial nuclear reactors in the United States in almost 30 years. The Nuclear Power 2010 (NP 2010) program is a government-industry, 50-50 cost-shared initiative aimed at clearing the barriers to building new nuclear power plants in the U.S. Utilities must plan for a 26 percent increase in consumer demand by 2030, roughly one percent per year according to the Energy Information Administration. Industry experts say that the electric industry will need to invest \$1.5 trillion to \$2 trillion in new generation, transmission, distribution and demand-reduction technology by 2030 to meet consumer demand. These new plants are expected to help meet that demand and to replace older power plants with innovative, more efficient designs.

The anticipated goals of the NP 2010 program are:

1. To develop and bring to market advanced, standardized nuclear plant technologies; and

2. Demonstrate streamlined federal regulatory and licensing processes for siting, building and operating new nuclear power plants.

High construction costs remain the Achilles heel for nuclear power. According to a 2009 study by the Massachusetts Institute of Technology (MIT), building a nuclear reactor costs about \$4,000 per kilowatt, compared with \$2,300 per kilowatt for a coal-fired power plant and \$850 per kilowatt for a natural gas-fired plant. However, nuclear power operates at a much lower fuel cost than coal and natural gas, and the nation's 104 baseload commercial reactors run at about 90 percent capacity since 2003, providing about 20 percent of the nation's electricity and 72 percent of the carbon-free power, according to MIT. Construction cost estimates for new nuclear reactors have been rising about 15 percent since 2003 for materials, labor and new technologies.

The Electric Power Research Institute (EPRI), a

research and development arm of the electric utility industry, issued an updated analysis in August detailing how the electricity sector could reduce annual carbon emissions in 2030 by 41 percent from 2005 levels utilizing a combination of new technologies.

EPRI's proposal calls for 45 new advanced nuclear reactors by 2030, in addition to carbon capture and storage for coal-fired power plants, a four-fold increase in renewable generation, deployment of 100 million plug-in electric vehicles, and an eight percent drop in consumption through improved energy efficiency programs. EPRI estimates that its diversified plan could lower the cost of reducing carbon emissions by \$1 trillion by 2050.

Questions remain as to the adequacy of funding for building new nuclear reactors

While the federal loan guarantee program will provide a form of insurance for up to 80 percent of the project cost, the utilities are suggesting that financing the \$6 billion to \$8 billion price tag of a single new reactor represents a bigger challenge than the technical and regulatory hurdles. Realistically, the current loan guarantee program will enable possibly three or four reactors to be built, or optimistically, perhaps as many as six to eight reactors.

More information about the nuclear renaissance and funding programs may be obtained from DOE's website at: <http://www.ne.doe.gov/>.

Overuse of Household Disinfectants Could be Harmful

-- Tony M. Guerrieri, Research Analyst

Many people have a bottle of hand sanitizer in their car, on their desk, or in their home. We use it to clean our hands and kill illness-causing germs and bacteria. But what many do not know is that they might not want their hands to be too clean. A report by the national health group, Women's Voices for the Earth (WVE), contends hand sanitizers and household strength disinfectants may actually make you sick.

The report, *"Disinfectant Overkill: How Too Clean May be Hazardous to Our Health"*, links disinfectant chemicals with chronic illnesses and conditions such as asthma, hormone imbalance, and immune system

problems. Disinfectants are products whose primary function is to kill bacteria on a surface, but which are not necessarily formulated to remove dirt, stains, or other soils. The report cites more than 40 other reports and scientific studies that illustrate the health risks of chemicals found in kitchen cleaners, handy wipes, and other common cleaning products.

The WVE assessed the potential health hazards of five classes of disinfectants, or antimicrobial chemicals, and expressed concern about the prevalent overuse of products containing these chemicals by consumers. Chemicals reviewed and indexed in the report include:

- Chlorine bleach: The report calls it a “strong eye, skin, and respiratory irritant,” and if mixed with other cleaners like ammonia can release dangerous chlorine gas. The report adds, “Exposure to chlorine gas can cause coughing, shortness of breath, chest pain, nausea, or other symptoms.”
- Ammonia: Ammonia can be “irritating to the skin, eyes, throat, and lungs,” the group says, and can burn your skin, and damage your eyes (including blindness) upon contact.
- Triclosan and Triclocarban: These chemicals, commonly added to hand and dish soap and toothpaste, are linked to hormone imbalance and potential increased risk of cancer, the report states. Triclocarban appears to amplify testosterone in the body, while Triclosan has been shown to interfere with communication between cells in the brain and the heart, the report states, adding that studies have found these chemicals in nearly 75 percent of the people tested.
- Ammonia quaternary compounds (“quats”): The WVE states these chemicals are found in disinfectant sprays and toilet cleaners and have been identified as “known inducers of occupational asthma,” while some are linked to decreased fertility and birth defects in mice.
- Nano-silver: Added to textiles, plastics, soaps, packaging, and other materials to give them the natural antibacterial property of silver metal, “Nano-silver particles can penetrate deep into the body and have been shown to be toxic to the liver and brain,” the report indicates.

The report acknowledges that these chemicals are effective germ killers, but warns consumers to use them with caution. Disinfectants are a growing sector of business for cleaning product manufacturers, and analysts project that the global disinfectant market will reach \$2.5 billion in sales by 2012.

The WVE report also cites another worrisome trend linked to the excessive use of disinfectants: “The overuse of disinfectant chemicals also contributes to the growing problem of antibiotic-resistant bacteria, more commonly known as ‘superbugs.’” Antibiotic resistance is considered a major health issue.

How much is too much is the question when it comes to the use of disinfectants

The report states, “In most households, the need for routine disinfection is rare.” The household cleaning products industry has maintained that its chemicals are safe and effective when used as directed. Many products, however, also list warnings about breathing the vapors or letting the substance come into contact with your skin or mucous membranes.

The WVE’s report also outlines several “green” alternatives to cleaning products that contain harsh chemicals:

- Vinegar: A glass and window cleaner, the acid in vinegar destroys bacteria.
 - Borax: This naturally occurring powder can be used as a water softener, laundry freshener, and as a cleaner and bleaching agent.
 - Essential Oils: Studies have shown these concentrated liquids distilled from plants, such as thyme, rosemary, clove, eucalyptus, and oregano oils, have natural antibacterial properties.
- The WVE report also encourages consumers to practice what it calls “Good Food Safety.” These safety measures include:
- washing hands before handling food;
 - rinsing fruits and vegetables under running water;
 - keeping raw meats, poultry, seafood, and eggs separate from ready-to-eat foods to avoid cross-contamination;
 - cooking to high enough internal temperature to kill harmful bacteria in raw meats or eggs;
 - refrigerating or freezing foods as soon as you get them home. Never leave cooked foods out for more than two hours.

The WVE report, *“Disinfectant Overkill: How Too Clean May Be Hazardous to Our Health”*, is available at: <http://www.womenandenvironment.org/campaignsandprograms/SafeCleaning/disinfectants/Disinfectant%20Overkill.pdf>.

Energy Retrofitting Could Create Jobs

-- Craig D. Brooks, Executive Director

Retrofitting some 130 million U.S. homes to improve energy efficiency has the potential to be a cornerstone of job creation and help establish a new and expanding workforce for the future, according to a report by the Middle Class Task Force and the Council on Environmental Quality. The report, *"Recovery Through Retrofit"*, suggests that retrofitting homes in the U.S. to be more energy efficient would expand green job opportunities and boost energy savings for many Americans.

The report contains a set of recommendations for federal actions and addresses the market and non-market barriers that have prevented the home retrofit market from achieving national scale.

According to the report, existing techniques and technologies in energy efficiency retrofitting can reduce home energy use by up to 40 percent per home, and lower associated greenhouse gas emissions by up to 160 million metric tons annually by 2020. These retrofits also have the potential to cut home energy bills by \$21 billion annually, according to the report, thereby paying for themselves over time.

However, the report addresses three significant market barriers to increasing home energy efficiency through retrofitting and establishing a nationwide, sustainable market. According to the report:

- **Consumers need reliable home retrofitting information to make informed decisions:**

Consistent, accessible and trusted information is critical to building a reliable energy efficient home retrofit market in the U.S. The information must provide the consumer with a benchmark for energy efficiency and sound cost estimates and benefits for home

energy retrofits. Without some level of standardization combined with an effort to increase awareness, energy efficiency retrofits will likely remain a niche product, keeping consumer demand low and private investors out of the market.

- **The costs of home retrofit projects are beyond the average homeowner's budget:**

High upfront costs and a lack of affordable financing options deter many homeowners from considering energy efficiency retrofit projects. Currently the federal government is expanding a 30 percent tax credit for investment in residential energy efficiency projects, up to a cap of \$1,500 per primary residence over two years. Initial costs and financing these projects still make it difficult for the majority of homeowners to consider these projects. The solution, according to the report, is to make financing more transparent, more accessible, more consumer friendly and repayable over a longer period of time.

- **Increase the number of skilled workers and green entrepreneurs to successfully expand efficiency retrofit programs on a national scale:**

A lack of skilled, well-trained retrofit professionals is a barrier to achieving a desired scale of efficient, reliable and cost-effective home energy retrofits. Therefore, the report suggests the development of a workforce certification and training standards program. This will provide the consumer with a workforce equipped with both technical and business skills that will not only improve the rate of success for small efficiency retrofit businesses, but also increase the ability to respond to rising retrofit demand.

The report, *"Recovery Through Retrofit"*, is available at: http://www.whitehouse.gov/assets/documents/Recovery_Through_Retrofit_Final_Report.pdf.

2009 Annual Report Now Available

The Joint Legislative Air and Water Pollution Control and Conservation Committee recently released its 2009 Annual Report, a comprehensive review of the committee's activities for the past calendar year.

You may view the report on the "Reports" page of the committee's new website at <http://jcc.legis.state.pa.us>, or call the committee office at 717-787-7570 if you would like a copy.



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ON THE HORIZON...



A LOOK AT UPCOMING EVENTS

✓ Monday, March 22, 2010, 12 noon, Room G-50, K. Leroy Irvis Building, Capitol Complex, Harrisburg, PA – **Environmental Issues Forum** – Matthew Smith, Vice-president of Forest Operations for the Finite Carbon Corporation, will discuss the carbon marketplace and “Sustainable Forest Management and Ecosystem Services in the Private Sector.”

✓ Thursday, March 25, 2010, 10:00 a.m., Celebration Hall, 2280 Commercial Boulevard, State College, PA – **Legislative Forestry Task Force Meeting**.

✓ Wednesday, April 7, 2010, 9:00 a.m. to 12 noon, Rooms 201-202, Schuylkill Community Education Council Building, 1-7 West Centre Street, Mahanoy City, PA – **Public Hearing** – The hearing topic is “The Future of Anthracite Coal in Pennsylvania.”

✓ Monday, April 19, 2010, 12 noon, Room G-50, K. Leroy Irvis Building, Capitol Complex, Harrisburg, PA – **Environmental Issues Forum** – PA Cleanways and the Center for Rural Pennsylvania will provide an Earth Day program focusing on PA Cleanways’ illegal dumping survey and survey analysis, as well as plans for the Great American Cleanup.

Please call the Committee office at 717-787-7570 if you plan to attend any of these events. Also, check the Committee website at <http://jcc.legis.state.pa.us> for events that may be added to the schedule.



SPECIAL NOTE...

Committee Launches New Website

Visit Us at <http://jcc.legis.state.pa.us> To See Our New Look

The Committee is pleased to announce the launching of its redesigned website. We invite you to visit the new website at <http://jcc.legis.state.pa.us>. We hope you are as excited about the new look and content as we are.

Website visitors will find our familiar information: the Environmental Issues Forums schedule; the Environmental Synopsis monthly newsletter; Committee members; current events; Committee reports; staff contact information; Committee history and mission; and links to other helpful sites. We are hopeful that you will find it easier to navigate the site and make use of the pages above, and that you will find the new look more attractive.

Working with the Legislative Data Processing Center, we have also added some new features that we hope to put into use in the near future. These include some new interactive capabilities and the possibility of online surveys.

We invite you to visit the new <http://jcc.legis.state.pa.us> and make use of our newly launched website. We hope you enjoy it.

John Burrows, President/CEO of Energex Corporation, a wood pellet producer headquartered in Mifflintown, PA, said construction of such mega-plants is the exception rather than the rule right now. He added that the kind of new investment noted in the Times article is more likely to be a long-term proposition.

Burrows, who spoke about the PA pellet industry at the March 2009 Joint Legislative Air and Water Pollution Control and Conservation Committee's Environmental Issues Forum, pointed out that while Europe is very much interested in expanding its use of biomass, that does not necessarily include wood pellets.

"The demand in Europe is changing," Burrows said. "The UK, for instance, is not consuming pellets. They want to burn more biomass but are discouraging co-firing with wood pellets." He added that less expensive wood chips and agricultural fuel crops (i.e., from fast growing woody plants, switchgrass and the like) are more attractive right now in many European markets.

Also, the wood pellet industry, according to both Burrows and Karen Harman Smeltz of Harman Home Heating, has been extremely volatile depending on factors like the prices of fossil fuel, the effects of the recession and housing industry downturn, and natural events like Hurricane Katrina. Smeltz said that when the pellet stove industry started up in earnest about 12 years ago, it experienced several years of steady growth. When Katrina happened in 2005, however, and people were seeking alternative energy sources everywhere, it was impossible to keep stoves in stock. That increased demand created a pellet shortage and a price increase and a 2006 slowdown. When oil prices increased in 2007, Smeltz said, "We sold a year's worth of stoves in three weeks in June."

More consumer education regarding biomass is a necessity

But when the price of oil dropped again in 2008, she said, the pellet stove business dropped with it. Speaking about business currently, Smeltz said, "It's been worse, but we're looking for 2010 to be better. There is still a lot of consumer education needed when it comes to heating homes with biomass, an effort in which Harman is taking an active part."

Burrows agreed that the industry continues to face challenges. Right now, he said, there is an excess capacity of pellets, inventories are up and prices down. However, he believes that in the long-term the market for wood pellets will continue to grow.

Both Burrows and Smeltz agree that the primary markets for wood pellets to this point have been domestic and residential. But, it doesn't have to stay that way. Energex is currently working on increasing its institutional and industrial presence, and Harman is looking to move into more light commercial applications. Bulk delivery is also a potential way to build business, and Europe's long-term interest in biomass fuels is not likely to disappear.

Both said that the ARRA tax credits could help, but probably not in a major way. Smeltz said that so far it is not bringing people in the doors by itself, but once they come in, ARRA makes it more appealing to move ahead and buy. Burrows felt that ARRA would help "marginally", noting that when people are looking for high efficiency alternatives, there are other competitive technologies out there, such as wood stoves (another biomass alternative), as well as high efficiency gas burners.

In summary, the wood pellet industry is young, dynamic and continues to evolve. Pennsylvania seems well placed to play an active role in its future.

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