

Burning Bio News: Volume 2, Number 5

The 'Scorecard' of commercial bioenergy adoption

This issue of Burning Bio News includes the project data from biomass news stories reported in both May and June 2008. I have been continuously collecting data, but increased demands for my time, have me constantly evaluating the mechanics of my news links. Even though I am combining two newsletters into one this month, I have been able to add links almost daily for the last 5 weeks. I have also upgraded my data entry processes to facilitate getting this newsletter out faster.

My web traffic continues to grow and within the next week or so we'll be adding more navigation tools to my website. I am upgrading my 'links' pages and will be adding pages on a regular basis. Great things are happening in the Biomass Rules, LLC shop!

The end of June marks 18 months of tracking news data and reporting it in Burning Bio News! So while the Bioprojects chart is entitled 'Last 12 Months,' I have superimposed bars for the first half of 2007. The first six months of 2007 were pretty amazing. We are still experiencing the ripple effect contractions from the last 9-10 months. Cancelled projects accounted for 27% of the projects in May and 13% of the projects in June. In May, the cancelled projects were exclusively ethanol projects, which accounted for 90% of ethanol capacity in the news. In June, the cancelled volume was less and the ethanol projects moving forward increased. Things are moving forward slowly.

Bioproject News Events of the Last 12 Months

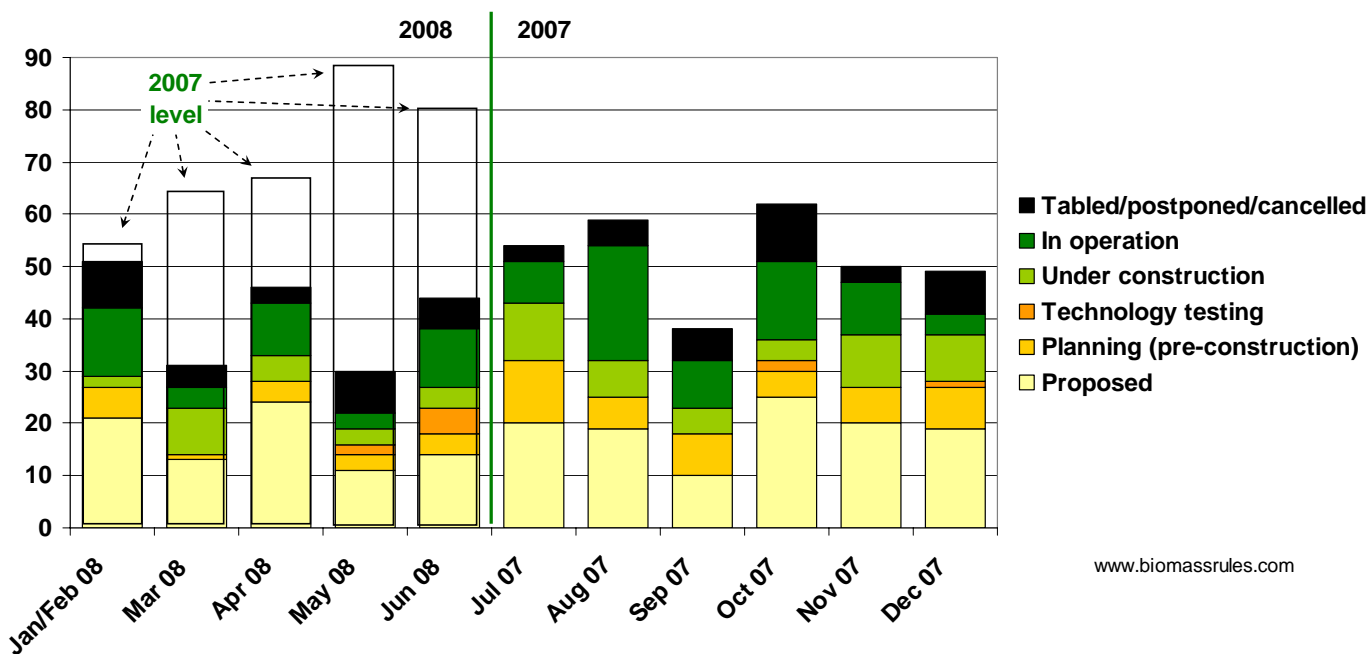


Figure 1 Bioenergy project activity for the last 12 months

May/June 2008 BioProject Summary

There were 30 US, commercial-scale biomass projects in May, and 44 projects in June, that were logged into the *Burning Bio News* datasets. An effort is made to report each initiative only once at each stage of commercialization. These projects represent only projects that were in the news in May and June of 2008. 54 of these 74 projects reported capacities. The May and June monthly totals are reported in Table 1.

Table 1 Summary of May/June 2008 biomass projects

	May 2008	June 2008
Total Projects	30	44
Total Reported, Ethanol, million gallons	762.9	997.0
Forward-Moving Ethanol, million gallons	73.9	395.0
<i>Cancelled Ethanol, million gallons</i>	<i>689.0</i>	<i>602.0</i>
Forward-Moving Cellulosic Ethanol, million gallons	14.0	23.0
Total Reported, Biodiesel, million gallons	74.0	214.8
Forward-Moving Biodiesel, million gallons	74.0	181.0
<i>Cancelled biodiesel, million gallons</i>	<i>0</i>	<i>33.8</i>
Total Reported Electricity, MW	132.6	287.0
Electricity, MW (biomass)	64.0	232.6
Electricity, MW (landfill gas)	12.0	3.2
Electricity, MW (biosolids) ^a	0	NA
Electricity, MW (manure)	56.6	0.2
Electricity, MW (other)	0	51.0
Fuel Pellets, tons^a	NA	710,000

a 'NA' indicates facilities were reported, but no capacity was reported.

The cellulosic ethanol numbers reported in Table 1, are included in the total ethanol numbers. The ethanol values in Table 1, therefore, do not sum to the total. Forward moving projects increased from May to June. The reported capacities of the cancelled projects also declined from May to June. Some fairly big news in May included the cancellation of the planned 18 million gallon, Iogen cellulosic ethanol project planned for Shelley, ID. They got a better offer in their home country of Canada.

Biodiesel plants are back on the table. The vast majority of the June biodiesel expansion is using non-virgin vegetable oil. The alternative feedstocks are split about half and half between used vegetable oil and animal fat from processing plants. These feedstocks compete less directly with human food uses than virgin vegetable oil. Although a capacity was not reported, Holland, MI is looking at growing algae for biodiesel at their municipal wastewater treatment plant.

The large biomass power plant projects listed in June, include a 108.6 MW solar-biomass hybrid plant to be built near Coalinga, CA, a 100 MW plasma-arc gasification project using solid waste as a feedstock, and the 24 MW biomass power plant in Snowflake, AZ that just came on-line. The large manure biomass plant listed in May is the announced Fibrowatt, 55 MW poultry manure power plant that will burn 500,000 tons of local poultry litter in Faison, NC.

Other compelling (June) projects include a carbon dioxide facility going in at the ethanol plant in Shelby, NY. A bioheat cooperative was formed in Swazey, NH to distribute bioheating oil similar to biodiesel fuel. Environmental Power announced another mega digester-to-natural gas project (634 million BTU) in Dublin, TX. Novozymes is building an enzyme facility in Blair, NE. Ze-gen has been successfully operating a gasifier in New Bedford, MA that converts construction and demolition waste to BTUs.

BTUs and the Best Value: Fuel for Residential Heating

In June, the end-of-season price activity, of the fuel pellet prices that I follow, did not occur. Fuel pellets are a seasonal fuel. The fuel pellet prices however just kept being reported. I thought that with all the fuel pellet capacity that was being constructed, the price of fuel pellets would also drop. This would have been great for the fuel pellet buyers. Not so great for the folks building pellet mills with dollar signs in their eyes.

Also in June the largest pellet fuel mill in the country opened in Florida. Green Circle Bio Energy, Inc. has a 500,000 ton annual capacity. Their principle market is Europe – not the US. I believe about 2 years ago the North American annual production was about 1.4 million tons, so this one new mill has a capacity that is 1/3 of the recent North American output.

News stories have been reporting that pellet stoves are flying off the shelves in July. The stoves are back-ordered. Fuel pellet users are stocking up on pellets now for the winter. The price of heating oil is nearly double what it was last fall. Folks who have to pay that price to fill their fuel tanks may fair better by buying a new heating system. My prices for heating oil are wholesale, not retail. My fuel pellet prices are retail. I collect my prices every week and convert them to a million BTU (MMBTU) value. I graphed the heating oil and fuel pellet prices (Figure 2). Wow! The fuel pellet prices on a \$/MMBTU basis are nearly flat for the last nine months. Last October, heating oil at \$2.20/gallon, had an energy value of nearly \$15/MMBTU. That is about the energy value of fuel pellets at the same time (\$222.50/ton). Now in July with heating oil at \$4.04/gallon, the energy value is nearly \$30/MMBTU.

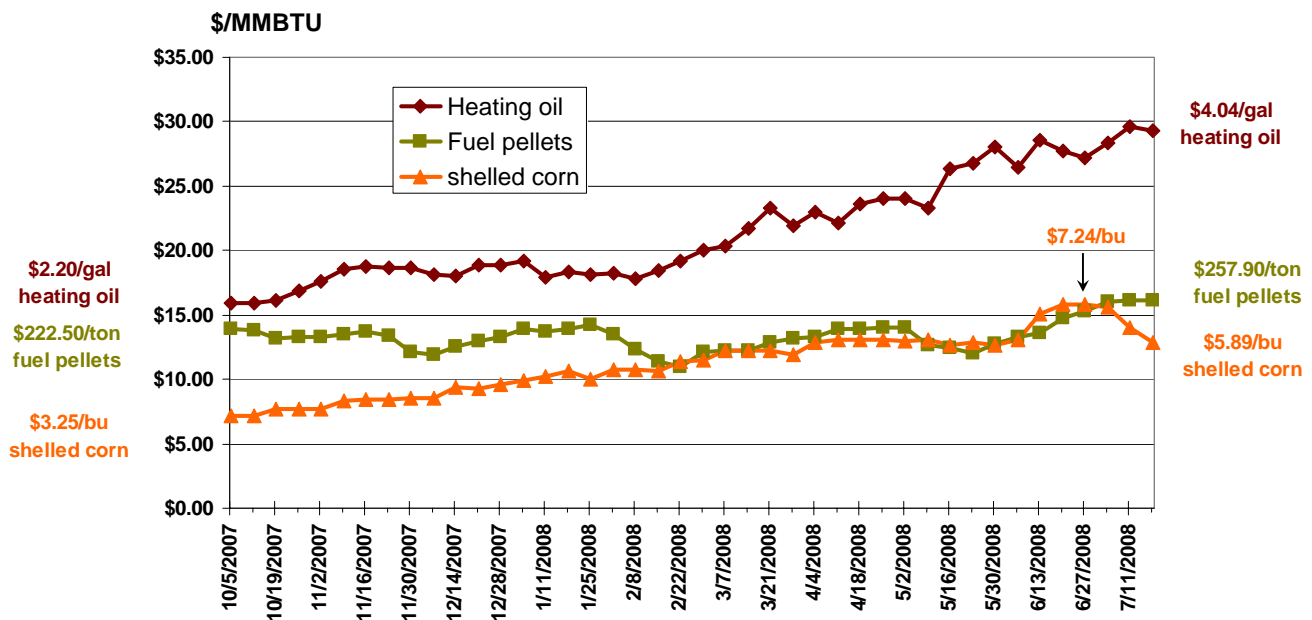


Figure 2 Energy Value Comparison between heating oil, fuel pellets and shelled corn (\$/MMBTU)

As discussed last newsletter, my energy values are based on average energy values of the materials themselves. There is no estimation of energy conversion losses. Since all the values in Figure 2 are being discussed as heating fuel, this chart would be more accurate if it included the conversion efficiencies that Dennis Buffington uses (Pennsylvania State University <http://energy.cas.psu.edu/>). In fact, the ability to compare substitute fuels is why Dennis Buffington includes the efficiencies. (My work moves across fuel platforms, so it gives me more flexibility to focus on just the inputs).

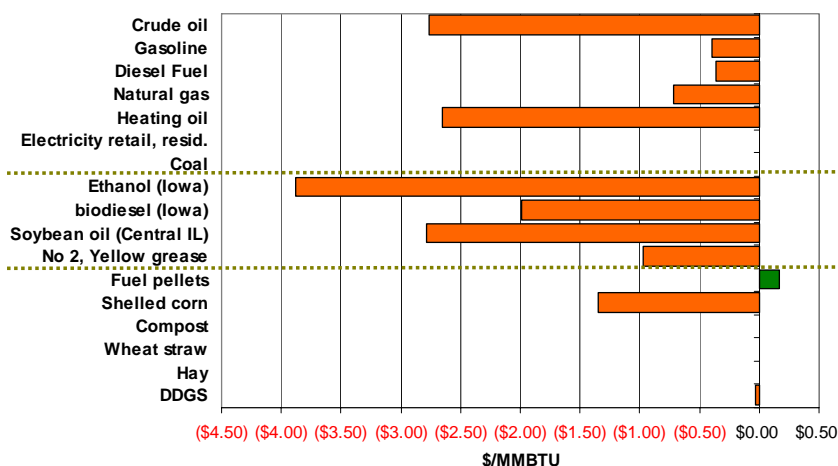
Many of the newer fuel pellet stoves will also burn shelled corn. Last fall, shelled corn at \$3.25 per bushel had an energy value of about \$7/MMBTU. That is about half the energy value of fuel pellets and heating oil during the same time period (last October). Over the last 9 months, the price of corn more than doubled hitting a weekly average price in Chicago on June 27 of \$7.24 per bushel. This is an energy value of \$15.86/MMBTU. Since February, the price of corn has had an energy value nearly equivalent to fuel pellets.

Now the last three weeks the price of corn has been dropping. The price of fuel pellets has not. This is a great example of how \$5/bushel corn is still a great energy value. At that price it may be difficult to feed to hogs or to make ethanol out of, but it is still a great value for heating a home.

One last point, 500,000 tons per year likely represents about one third of the North American demand for fuel pellets. If corn burners used 500,000 tons of corn over the winter for residential heat, how much corn would that be? A bushel of corn weighs about 56 pounds depending on the actual moisture content. There are 35.7 bushels in a 2,000 lb, ton. So, 500,000 tons x 35.7 bushels/ton = 17,857,143 bushels. This is about the amount of corn necessary for to feed a 50 million gallon ethanol plant.

In the table below on the left are the energy values I posted on my site from the week ending 7/25/08. The last column of the table represents the calculated \$/MMBTU for each item. The chart on the right represents the change in energy value from the week before. This kind of chart does not appear very often. Essentially all the prices that are not seasonally dormant are really dropping. Iowa Ethanol dropped nearly \$4/MMBTU in one week. For comparative purposes, the energy value itself of IL coal was \$3/MMBTU. Coal had a lower energy value as a fuel than Iowa Ethanol lost in one week. All of my prices are averages of constructed numbers so small changes are no different than zero change statistically. Curiously the only price that did not go down or stay the same was one of the materials that should have been seasonally dormant, fuel pellets.

Fossil Fuels	Date	Market Price	\$/MMBTU
Crude oil	7/18/08	\$128.94 \$/Barrel	\$22.23
Gasoline	7/21/08	\$4.064 \$/Gallon	\$32.51
Diesel Fuel	7/21/08	\$4.718 \$/Gallon	\$36.66
Natural gas	7/23/08	\$11.61 \$/MMBtu	\$11.61
Heating oil	7/18/08	\$3.674 \$/Gallon	\$26.62
Electricity retail, resid.	Feb-08	10.24 ¢/kWh	\$30.01
Coal	7/18/08	\$70.00 \$/ton	\$2.97
Liquid Fuels			
Ethanol (Iowa)	7/25/08	\$2.28 \$/Gallon	\$29.93
biodiesel (Iowa)	7/25/08	\$5.21 \$/Gallon	\$44.15
Soybean oil (Central IL)	7/25/08	56.81 ¢/Lb	\$33.41
No 2, Yellow grease	7/25/08	\$38.50 \$/cwt	\$25.00
Solid Fuels			
Fuel pellets	7/25/08	\$252.95 \$/Ton	\$15.81
Shelled corn	7/25/08	\$5.28 \$/Bushel	\$11.56
Compost	7/25/08	\$25.00 \$/cu. yard	\$3.63
Wheat straw	5/15/08	\$100.00 \$/Ton	\$6.76
Grass hay (lg rnd bale)	5/15/08	\$80.00 \$/Ton	\$5.33
DDGS	7/22/08	\$172.00 \$/Ton	\$9.15



Note: Electrical prices are being updated slowly. Public hay and straw prices are not changing through the summer.

Biopolicies (laws, policies and programs)

For those readers that are relatively new to Biomass Rules and Burning Bio News, economic growth here is based on technology (natural science), economics (human choice), and laws and policies (that set boundaries of human choice on technology use). The summary of Bioenergy projects reflect the economics of human choice. This next section, Biopolicies, reflects the boundaries between choice and technology.

In combining May and June, I separated the two months by putting **the June activities in a bold green font**. The changes in policy and science are more difficult to track and analyze than the economic events. It is all the more important to at least identify the activities in these categories, because A LOT IS HAPPENING!

May, Incentives, \$175,509,630; **June, Incentives and funding, \$38,374,560**

- 13 Energy Economic Dev. grants funded with Clean Energy Funds to advance renewable energy/efficiency, CO \$636,630.
- CA Energy Comm. granted nearly \$500,000 for biomass power generation site at the Woodland Biomass Research Center.
- Energy Biosciences Institute (Berkeley, CA) announced \$20 million in funding for 49 cellulosic biofuel research projects.
- The U.S. DOE awarded Trillium Fiber Fuels (OR) a \$100,000 grant to test a new method for making cellulosic ethanol.
- Central Carolina Comm. College's Biofuels program has received a \$195,000 grant from the Biofuels Center of NC.
- Florida State got a \$1 million grant from Excel to launch a pilot study for American Crystal Sugar in Moorhead, MN.
- The Denver Zoo is using \$100,000 grant from CO Governor to plan gasification energy system for manure and trash.
- OH Dept. of Natr. Resources awarded \$245,000 to Clark County Solid Waste Mgmt District to expand composting facility.
- State of IA awarded Marion, IA, \$150,000 to study converting solid waste into energy using a plasma arc gasification technology.
- DOE awards \$126.6 million to two more carbon sequestration projects in CA and OH. These are sequestration project 5 and 6.
- San Francisco (CA) received \$1 million from Public Utilities Comm. for used-oil biodiesel plant. **Private biodiesel called a "foul."**
- IA State U received \$78,000 from the Grow Iowa Values Fund to use fungus to clean water used in the making of ethanol.
- Sacramento Municipal Utility District (SMUD) provided \$300,000 rebates for solar electric system installed at County Building.
- WA State U and DOE, PNNL dedicated a new \$24.5 million lab for the advancement of biomass research in Richland, WA.
- **3 Sampson County, NC, hog farms were selected to receive up to \$500,000 each for non-lagoon, manure treatment technology.**
- **WI, Office of Energy Independence announced \$46,000 grant to Premier Farm Supply Coop biomass co-generation project.**
- **The U.S. EPA awarded \$200,000 to MS State U for research to transform wastewater treatment plant sludge into biodiesel.**
- **Green Fuels, a canola-based OR biodiesel firm, received \$10,000 grant to find new uses for canola oil.**
- **Golden Grain Energy LLC (IA) and Best Energies Inc. (WI) received \$200,000 from IA to extract corn oil for biodiesel.**
- **The Denali Commission and Alaska Energy Authority (AEA) will award \$5 million for 33 alternative/renewable energy projects.**
- **WI Focus on Energy awarded \$650,000 for biomass boiler conversion for Mullins Cheese plant and Domtar Paper Co. mill.**
- **DOE is offering up to \$30 million over 3 years for three cost-shared Plug-in Hybrid Electric vehicle demonstration projects.**
- **MI announced that 14 stations will receive up to \$70,000 in incentives to convert equipment to provide ethanol (E85) fuel.**
- **KS State received a \$98,560 grant from the National Science Foundation to study algae biofuels manufacturing in the ocean.**
- **National Governors Association awarded grants of \$50,000 to each of 12 states to advance clean energy projects (\$600,000).**

Other Economic and Indirect Incentive Policies

- WA State Law, signed by Gov. Chris Gregoire provides a 6-year exemption on taxes if digester purchased before Jan 1, 2013.
- Sustainable building construction is becoming more common, but cost of envr. certification criteria is prohibitive (MA).

- An estimated 100,000 Bay Area commuters took to two wheels Thursday (5/15/08) in observance of Bike to Work Day (CA).
- Bion Environmental Technologies, Inc. announced approval to participate in the PA nutrient credit trading program.
- General Motors Corp. took an undisclosed equity stake in a second cellulosic ethanol firm, Boston-based Mascoma Corp.
- Entrepreneur, Leslie Otten of Bethel, ME wants to convert 10% of ME homes from oil heat to wood pellets in the next 5 years
- DuPont (DE) and Danisco (Denmark) team up on \$140 million biofuel venture, targeting corn stalks and sugar cane bagasse.
- Intrepid Technology and Resources, Inc., ID, announced a digester solid marketing agreement with Magic Valley Compost.
- Amid soaring food prices, urban farms are sprouting across the city (Pittsburgh, PA)
- Metropolitan Energy and Organics is advocating MI use food waste and paper goods to produce natural gas and clean compost.
- **AK officials plan to give close to \$180,000 to the person with the best idea for a portable machine that turns fish waste into fuel.**
- **Midwest Governors Assoc. sent a letter of support for the Renewable Fuels Standard (RFS) to EPA Admin., Stephen Johnson .**
- **U of IL website, Swine Waste Economical and Environ. Treatment Alternatives (SWEETA) <http://www.sweeta.illinois.edu/>**
- **Harbor Springs, MI, City Council agreed to buy up to 1 MW of power of green power offsets from MI landfill gas company.**
- **EPA recognized POET Biorefining (IA) and East Kansas Agri-Energy, LLC (KS) for reducing energy use and GHG emissions.**
- **ME businesses: Aubuchon Hardware and NE Bank; offering \$5,000, low-interest loans to convert to an alt-energy appliance.**
- **Leading dairy groups: DMI, IDFA, & NMPF, announce industry-wide action plan to reduce fluid milk's carbon footprint.**
- **Duke Energy Ohio is asking for proposals for 61,000 MW hours of renewable energy, to comply with a new OH law.**
- **EPA recognized 5 "less toxic or wasteful" technology developers with the Presidential Green Chemistry Challenge Awards.**
- **The Green Transportation Initiative at Oak Ridge National Labs. received a White House "Closing the Circle Award."**
- **The X-Prize Foundation announced 100 mile-per-gallon equivalent vehicle challenge. In addition, people must want to buy it.**
- **Thirteen companies have won inaugural grants of up to \$100,000 from the North Carolina Green Business Fund.**
- **The Algal Biomass Organization has formed to help accelerate the development and commercial application of algae biomass.**
- **The Energy Independence & Security Act of 2007 excludes biomass from federal lands. This means thousands of slash piles from 155 national forests can not contribute to the renewable fuels standards (RFS). New legislative 'fixes' are being introduced.**
- **Solazyme (CA) reports that its microalgae-derived fuel is the first renewable diesel to meet the ASTM, D-975 specifications.**
- **Waste Management, Inc. launched their consumer relations, environmental promotional website, www.greenopolis.com.**
- **Honeywell announced an energy selection tool, the Renewable Energy Scorecard(TM) to streamline energy decisions.**
- **Six, State-level regulations of source-separated organics, composting facilities were analyzed by BioCycle Magazine.**
- **Flood waters spread across the corn belt, preventing crop production and sending grain prices to record highs.**
- **AgBioworks, TN, sought 25 TN farmers to grow energy crops. The foundation will reimburse farmers \$500/ac for the crops.**
- **Cool Kittery, a renewable heating oil coop in Kittery, ME is being established to supply Bioheat, a bio-blend of heating oil.**
- **MO ag bill was signed into law June 6 by Gov. Matt Blunt. The law exempts sales tax on ag diesel fuel & fence supplies.**

Bioenergy, the Law, and Other Miscellaneous Policy News

- Some MO elected officials have been chastised for investing in biofuels projects that have tax breaks associated with them.
- Members of the Association of Irrigated Residents, or AIR, filed suit to stop a corn ethanol plant proposed near Famoso, CA.
- Grease thefts are reportedly causing biodiesel production problems in Washington and California.
- Denton, TX, City Council members voted to sever ties with and sue the biodiesel firm that produces biodiesel at the city landfill.
- A new rule in AK bars chain saw use in the Tongass National Forest. This interferes with access to use of a wilderness island.
- USDA has amended Federal procurement guidelines, adding nine sections for biobased products.
- MN Gov. Tim Pawlenty signed a bill into law increasing the current 2% biodiesel mandate to a whopping 20% by 2015.
- CA \$300 fuel license, road tax and 18 cent per gallon federal tax, are creating friction for do-it-yourself biodiesel makers.
- The Waterford Township compost site, Waterford, MI, has been closing due to new requirements mandated by the state.
- Suffield, CT Biodiesel will pursue plant proposal even though their application for a special permit was rejected by the town.
- Roads to open around June 10 for firewood cutting in MT around June 10. Permits are required to gather firewood.
- **Ethanol company, Gulfstream Bioflex Energy, delayed by Rogersville, MO lawsuits, has been issued an air permit by MO DNR.**
- **The new owners of bankrupt, unfinished ethanol plant outside Canton, IL, were given a conditional permit to produce ethanol.**
- **To meet the California law on climate change (AB-32), the California Air Resources Board (CARB) released the country's most sweeping climate change plan, outlining ambitious measures for cleaner cars, renewable energy and capping emissions.**
- **An AL, federal court approved the a settlement for Alabama Biodiesel for an illegal release of vegetable oil.**
- **Empire State Ethanol & Energy LLC, filed a \$72 million lawsuit against Albany Renewable Energy LLC in U.S. District Court in Albany, NY. In the suit, Empire State Ethanol claimed Albany Renewable Energy had stolen their ideas.**

Bioscience (science and technology)

Technology is always evolving. New technologies allow us to get more from less. They allow a crowded planet to thrive.

- Sapphire Energy, uses algae, sun, CO2, and non-potable water to make "green crude." Its first fuels should be ready in 3 years.
- BGP is using a portable gasification unit to vaporize up to 25 tons of hazardous waste per day from natural disasters.

- CleanTech Biofuels is developing a process to take MSW and produce ethanol.
- DOE, Argonne Natl. Lab. released new vers. of Greenhouse gases, Regulated Emissions & Energy in Transp. (GREET) model.
- Fred Tennant is VP of Business Dev. for PetroAlgae, LLC. His Fellsmere, FL farm is an R & D facility for PetroAlgae.
- MA cranberry growers look at biomass energy options for post cranberry harvest: leaves, rotting fruit and twigs.
- Oak Ridge Laboratory recently tested BioBased 501, a soy-based spray foam insulation manufactured by BioBased Insulation.
- Furfural is being looked at as biofuel. It is used as a solvent and for manufacture of specialty chemicals used for plastics.
- The Lovett School, Atlanta, GA, is using used-cooking oil to produce biodiesel.
- USDA-ARS research indicates DDGS attributes for plastic: a high fiber content and a molecular structure suitable for binding.
- U. of TX, Austin has created a strain of blue-green algae that capable of producing cellulose, sucrose and glucose.
- A new AURI study shows the feasibility of using anaerobic digestion for energy and fertilizer from thin stillage & corn solids.
- Brunswick Comm, College, in Supply, NC, is growing 6,000 liters of algae for biodiesel to power two tractors on campus.
- U of CO, CO State U, and NREL are developing a rapid solar-thermal reactor systems for the conversion of biomass to syngas.
- Agro*Gas plans to build a cellulosic plant to produce gasoline and biodiesel from kudzu in McMinn County, TN.
- AGP has selected HPD to provide an enhanced stillage concentration system to its Hastings, NE ethanol production plant.
- BioSolar, Inc. announced it is partnering with Rowland Technologies, Inc., in the manufacture biobased solar cell component.
- The "Job Opportunities for the Green Economy" Study identified 6 green industry growth categories: building retrofitting, mass transit, fuel-efficient cars, wind power, solar power and cellulosic biomass fuels.
- The "Stop Trashing the Climate" study called for higher taxes on incinerators and to end subsidies for waste-to-energy projects.
- Bio Economic Research Assoc. (www.bio-era.net) released "The Big Squeeze: New Fundamentals for Food and Fuel Markets."
- West Fraser and EPCOR tested a timber slash and residual harvester for use in a planned biomass power plant in Houston, TX.
- A recent Renewable Fuels Association and Argonne National Laboratories survey indicated that in the last five years:
 - Ethanol yields increased 6.4 percent in dry mills and 2.4 percent in wet mills.
 - Total energy use (fossil fuels and electricity) decreased 21.8 percent in dry mills and 7.2 percent in wet mills.
 - Water use decreased 26.6 percent in dry mills.
- Reducing the world's CO2 emissions by 50% by the year 2030 will require \$45 trillion claims International Energy Agency.
- BioCycle compares compostable biodegradable products and discussed practices to separate products from the waste stream.
- An Office Depot survey of 2,500 business professionals reported half the respondents were interested in "greener" offices.
- USDA reports fertilizer costs have risen faster than fuel prices. Farmers paid 65% more for fertilizer in April than last year.
- MI State U new genetically modified corn varieties to express different cellulase enzymes in the stalk and leaves.
- The nonprofit Samuel Roberts Nobel Foundation is managing the seeding of 1,100 acres of switchgrass near Guymon, OK.
- Gulf Ethanol Corp. set up a R & D facility in TX to develop a cellulosic feedstock preprocessing technology by Vortex Ventures.
- June flooding caused 161 WI communities to discharge hundreds of millions of gallons of untreated sewage into WI waters.
- USDA-ARS monitored two, New England pastures and found more carbon was removed in the crop than it sequestered.
- Coal-bed carbon sequestration pilots discussed with the focus on the Pump Canyon power plant exhaust test pilot in NM.
- Genencor broke ground in IA on a \$4.6 million, training center to train customers on the best way to use their technologies.
- Northwestern PA farmers formed a co-op to produce camelina to fuel the 45 million gallon, Lake Erie Biofuels Plant.
- Gyles Randall, U of MN: farmers are too slow to change fertilizer practices due to economics and bad advice from consultants.

Even with ethanol and biodiesel project cancellations, an economy that is in the tank, and high grain and energy prices; the adoption of bioenergy continues to roll on. For more info on biomass economics and regulations, check out the rest of my website, www.biomassrules.com. I continue to upgrade it as I go.

Serving all your needs

- as a biomass economic visionary
- an innovative regulatory/economic analyst
- providing access to real-time biomass project data, or
- as a provocative speaker to discuss agriculture's shift from a culture of 'compliance' to 'environmental profit'...

- Call me!

Mark Jenner, PhD
 Biomass Rules, LLC
 618.664.9687
mjenner@biomassrules.com
www.biomassrules.com

Remember, Manure is not a four-letter word!