



FOCUS ON...

DOE Partnerships Bridge Ethanol Technology Gap

"There will be many benefits from a successful initiative, including reducing the cost of domestic ethanol production, creating new markets for U.S. corn growers, encouraging the production of a clean-burning alternative to gasoline and helping to cut our dependence on imported oil."

Dan Reicher, Assistant Secretary for Energy Efficiency and Renewable Energy



High Plains Corporation in York, Nebraska, is an awardee of the "Building a Bridge to the Corn Ethanol Industry" contract.

High Plains Corporation/PIX 07265

As the corn ethanol industry grows, so does its interest in new technology. In February 1999, the U.S. Department of Energy (DOE) awarded six subcontracts for the "Bridge to the Corn Ethanol Industry" program. These subcontracts will help connect the well-established corn ethanol industry with new technologies for making ethanol from agricultural wastes such as corn stover and corn fiber. These cost-shared partnerships will evaluate the cost of expanding grain processing facilities with new cellulosic ethanol production technology. "With more types of feedstocks, especially from the corn industry, ethanol producers can keep up with expected increases in demand," said Dan Reicher.

The corn industry: key to ethanol's success

Since the oil embargo of the 1970s, domestic ethanol production has been seen as one way to decrease U.S. dependence on foreign oil. The corn processing industry is our country's largest ethanol producer, and possesses key expertise, processing knowhow, and access to capital markets. It is therefore well poised to take the

lead in developing an ethanol industry based on agricultural waste. The DOE program, through the National Renewable Energy Laboratory (NREL) will take the first step by conducting engineering feasibility studies of agricultural residues to help meet the increasing demand for ethanol.

Economic and technical challenges

A primary goal of the DOE program is to provide the grain processing industry the opportunity to explore the use of agricultural residues as feedstock, by allowing it to examine new technology through cost sharing the initial evaluations of business potential.

Building a new ethanol plant is capital intensive, and the economic challenges of incorporating new technologies constitute a major obstacle to expansion. "The site-specific subcontracts will give our customers a chance to evaluate the benefits of using the new technology in their own plants at a low cost," said Robert Walker, president of Swan Biomass Company. "They will be

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“We applaud DOE for its commitment to work with today’s ethanol industry to expand the production of ethanol from nontraditional feedstocks. By working together, U.S. ethanol producers and DOE will ensure that renewable fuels play an ever-increasing role in meeting our nation’s transportation energy needs.”


Eric Vaughn, President
Renewable Fuels Association

very helpful because ethanol producers usually can't afford to evaluate new technology and designs for ethanol production.” Swan will work with Chippewa Valley Ethanol of Minnesota and High Plains Corporation, an ethanol production company with plants in three states, to evaluate the economic viability of an ethanol production process that uses lignocellulosic feedstocks instead of grain starch.

To master the technical challenges associated with new technologies, the subcontractors will work with engineering design firms to study ethanol facilities and determine how they can absorb new technology more easily. One such firm is Vogelbush, U.S.A., which will study how to make ethanol from corn stover at Chief Ethanol Fuels’ Nebraska plant. It will also perform a preliminary cost comparison of several other technologies. “We will examine ideas from ethanol pilot plant studies and try to streamline and commercialize them,” said Vogelbush president

Gunter Brodel. “We hope that by designing a more efficient plant, we will make more feedstocks available and reduce production costs.”

Ethanol from corn – everyone wins

DOE strives, through its Bridge to the Corn Ethanol Industry program, to reduce the cost of producing ethanol, thereby ultimately reducing its cost to consumers. DOE hopes to give its partners in the ethanol industry the opportunity to explore new production technologies, taking advantage of the grain processing infrastructure. DOE will also obtain feedback from the grain processing industry to guide future research and development in biomass conversion. A successful initiative will benefit farmers and ethanol producers by strengthening the demand for the farmers’ products (including ethanol), and the entire country will benefit from a stronger economy that is less dependent on imported oil. 

“Building a Bridge to the Corn Ethanol Industry” contract awardees:

Merrick and Co., Aurora, Colorado and
High Plains Corp., York, Nebraska

The New York State Technology Enterprise Corp., Rome, New York and
Robbins Corn & Bulk Services, Sackets Harbor, New York

Swan Biomass Co., Oakbrook Terrace, Illinois and
High Plains Corp., Portales, New Mexico

Purdue Research Foundation, West Lafayette, Indiana and
Williams Energy Services – Ethanol, Pekin, Illinois

Swan Biomass Co., Oakbrook Terrace, Illinois and
Chippewa Valley Ethanol Co., Benson, Minnesota

Vogelbush U.S.A., Inc., Houston, Texas and
Chief Ethanol Fuels, Inc., Hastings, Nebraska



ON THE FEDERAL FRONT

New Market Brings Life to Old Tax Credit

The growing ethanol fuel market has increased the number of ethanol pilot plant projects, and renewed interest in an ethanol tax producers’ credit. This dollar-

for-dollar \$0.10/gallon credit (for as much as 15 million gallons per year of qualified ethanol fuel production) can reduce an eligible small ethanol producer’s federal income tax by as much as \$1.5 million per year.

“There are a lot more ethanol plants today than there used to be, and a lot more interest in the tax credit,” according to Ann Rotroff, an Atlanta attorney whose firm is structuring several small ethanol projects. “The problem is, if small farmers don’t make enough

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IN THE SPOTLIGHT

Corn Stover to Ethanol— A Plan for Commercializing Collection

Traditionally, DOE's Office of Fuels Development (OFD) has focused on technologies for producing ethanol from agricultural wastes, forestry residues, and dedicated energy crops. One of the most abundant agricultural residues is corn stover. It is available in high density in the corn processing belt, where other agricultural feedstocks are also typically available. It is located near the agricultural processing industry and in areas that have a good infrastructure for collecting and transporting the materials.

"So much is available and there is so much near large agricultural processors and ethanol producers, that we can generate large amounts of ethanol with a resource that is only slightly used now," says John Sheehan, of the National Renewable Energy Laboratory's (NREL) Biofuels Program analysis team.

OFD representatives met with staff of two of its laboratories (Oak Ridge National Laboratory [ORNL] and NREL) to discuss environmentally friendly ways to make ethanol. Because large amounts of corn stover are produced when corn crops are harvested, OFD directed ORNL and NREL to develop a comprehensive plan for commercializing ethanol production from corn stover.

As a follow-up to that directive, NREL and ORNL staff developed an integrated plan for commercializing corn stover conversion to ethanol with commercial production starting by the end of 2005. The plan requires


two major achievements: (1) the continued development of better cellulase enzyme and ethanol-producing strain technology; and (2) an acceptance of corn stover collection as part of an improved agricultural practice for corn farming. The assumption of the need for improved technology is based on NREL process economic models. It does not take into account synergies that corn processing plants may offer that could expedite commercialization. Acceptance of corn stover collection will require the leadership of farmers, the USDA, and environmental groups to gain consensus on

a new agricultural practice that includes corn stover collection as part of cultivating corn.

These activities include the "Bridge to the Corn Ethanol Industry" program (see article on p. 1). Dialogues are also being established with environmental groups about the benefits of improved agricultural productivity. Meetings and workshops are planned to discuss issues on corn stover collection. A major national focus is to demonstrate that residue can be collected economically, without eroding the soil, and to offer ways in which it can be collected as part of an improved agricultural practice.

Other efforts involve working with local farming communities and

entrepreneurs who are exploring corn stover collection, and on collaborating with companies interested in higher-value products from sugars to understand what opportunities open up as sugar costs drop.

When successfully deployed, corn stover-to-ethanol manufacturing plants will increase farmer income and rural economic activity. Improving corn stover collection technology and accelerating its acceptance into the corn ethanol marketplace will also advance America's ethanol industry and its national economy. 



Improving corn stover collection technology will advance America's ethanol industry.

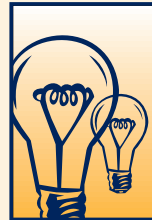
Warren Gretz, NREL/PIX 02268

income, they won't have enough tax to benefit from the tax credit. That's where an investor comes in," she says.

A project can be structured to benefit the investor and the farmer. A small producer whose farm income is too low to finance a project, but who does not want to relinquish project control, can seek investors. "Investors are more educated about alternative fuels today. They see how investing in projects like these can benefit technology development and themselves," stated Rotroff.

The credit was set to expire next year, but environmental groups joined investors and small ethanol producers to persuade Congress to extend it to December 31, 2007.

For a copy of *Qualifying for the Small Ethanol Producer Credit*, call Ann Rotroff at Gomel & Davis (404-223-5900) or arotroff@gomeldavis.com. 



DID YOU KNOW?

Upcoming Conferences and Events

Fifth National Clean Cities Conference

May 23-26, Louisville, KY
Contact: Clean Cities Hotline
800-CCITIES
www.ccities.doe.gov

15th Annual International Fuel Ethanol Workshop and Exposition

June 22-25, Cedar Rapids, IA
Contact: Bryan & Bryan, 719-942-4353

Global Soy Forum '99

August 4-7, Chicago, IL
Contact: 217-244-7384
www.gs99.uiuc.edu

2nd Annual Ag Fiber Technology Showcase

August 18-20, Memphis, TN
Contact: Pete Nelson, 901-757-1777
www.agrotechfiber.com

Fourth Biomass Conference of the Americas

August 29-September 2, Oakland, CA
www.nrel.gov/bioam

New Biofuels Website!

The National Biofuels Program has a new website: <http://www.ott.doe.gov/biofuels>. The Biofuels Program, under the guidance of OFD, is working to make OFD's vision of large-scale domestic ethanol production from biomass a reality. The website offers everything from a biofuels primer, to legislative information, to updates on biofuels technologies, feasibility studies, and related commercialization activities by national laboratories, universities, private industry, research foundations, and other government entities.

Recent Publications (call the U.S. DOE Hotline at 800-423-1363 for copies)

Biofuels – A Solution for Climate Change (DOE/GO-10098-580)

Bridge to the Corn Ethanol Industry (DOE publication)

Ethanol: Separating Fact from Fiction (DOE/GO-10099-736)

Excellence in Biotechnology for Renewable Fuels and Chemicals (NREL/BR-580-24111)



DOE/GO-10099-762 For more information, contact the National Alternative Fuels Hotline at 800-423-1DOE.



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National Renewable Energy Laboratory
National Alternative Fuels Hotline
1617 Cole Blvd, MS: 1633
Golden, CO 80401

