



A RETAINER SERVICE FROM PIRA ENERGY GROUP

Global Biofuels Service



Making Sense of *the* Biggest Change — and Challenge — To the Energy Industry in the 21st Century

Why Follow the Biofuels Market?

The global use of fuel-grade ethanol and diesel manufactured from natural (biological) sources is growing at a rapid rate. Biofuels represent a significant potential renewable — and possibly economical — source of energy, while providing the enviable benefits of producing less greenhouse gas emissions than hydrocarbons and creating new jobs, particularly in the agricultural industry. Helped by recent high petroleum prices and the desire for energy independence, biofuels are also gaining considerable political support, reflected in mandates, targets and tax incentives for production in over 40 countries.

These favorable factors are causing a proliferation of bioethanol and biodiesel production plants worldwide. Compared to petroleum refineries — newbuilding of which has virtually stopped — biofuels plants are relatively inexpensive and can be constructed much faster. Yet amid this rapid development, many important questions are being raised: How will government regulations evolve? How much capacity will be built and how much biofuel will be produced? What will be the trade patterns? What will the prices of biofuels be? How will they impact the supply/demand and prices of the agricultural raw materials? Will the increase in demand for agricultural products change the demand pattern and price of some foods? What will be the profitability of biofuel manufacturing in the longer term?

For the traditional energy player, however, biofuels development raises broader issues, posing a different set of vexing questions. What will be the impact on energy and related industries, including the need for additional refining capacity? Will biofuels reduce dependence on foreign oil, and, if so, by how much? What will be the impact on demand for, and prices of, crude oil and refined products? How will the use of biofuels impact the transportation industry?

To answer these questions, both established energy companies and new “agri-energy” concerns around the world need a reliable, concise, yet comprehensive and continuous source of historical and current biofuels information and analysis. They also require reasonable and objective market forecasts, allowing them to navigate profitably the rapidly emerging biofuels market. To help them, **PIRA Energy Group's Global Biofuels Service provides the same exhaustive supply-and-demand fundamentals data, analysis, and projections that have been the hallmark of the other PIRA retainer services.**



Global, Comprehensive Analysis of Bioethanol, Biodiesel, Renewable Diesel and Biobutanol

The Global Biofuels Service provides an in-depth analysis of the commercial markets for bioethanol in the U.S., Brazil and Europe, which account for about 90% of global bioethanol production. Other countries/regions with active bioethanol programs are also covered, including China, Canada, Colombia, Argentina, South Africa, India, Thailand and Australia.

Further, the service covers in detail the biodiesel industry in Western Europe — which accounts for 80% of global biodiesel production — and in the U.S. Regular analysis of other countries that have active biodiesel programs, such as China, Brazil, Indonesia, Malaysia, South Korea, Singapore, the Philippines and India, is also provided. Renewable diesel, a form of biodiesel without esterification is also covered.

PIRA's ongoing analysis tracks and discusses the following issues for each country:

- Government mandates and incentives
- Supply
- Demand
- Trade
- Market structure
- Agricultural feedstocks for production
- Prices

The depth of PIRA's analysis may vary for each individual country, depending on the size and importance of a particular country's biofuels industry and the availability of information.

Particular emphasis is placed on reviewing historical and current ethanol pricing and manufacturing economics in the U.S. and making projections built on PIRA's forecast of crude oil and refined product volumes and prices, which are the main price-determining mechanisms for bioethanol and biodiesel. Other liquid fuels produced from biological materials, such as butanol and jet fuel will also be covered as those markets develop.

Another important component of the service is an online database of global ethanol and biodiesel plants. This database lists information on existing plants' ownership, location, and firm and probable expansions, as well as an encapsulation of new facilities to be built around the world. When available, data such as specific feedstock, production process, technology provider, capital costs and marketers are provided.

What Are the “Deliverables” of the Global Biofuels Service?

Clients to the Global Biofuels Service receive the following service features:

1. Comprehensive Monthly Report

The *Global Biofuels Monthly Forecast* provides clients with an up-to-date assessment of the major market dynamics. The following key issues are covered:

- **Global mandates and targets for biofuels** – A review of recent biofuels initiatives worldwide.
- **U.S. ethanol production, consumption, imports and inventories** – Historical data for the current year and monthly forecasts.
- **Existing capacity, plants under construction and planned facilities** – Review of the current capacity and forecast for the next year.



- **Crude oil and refined products prices** – Historical for the current year and monthly forecasts.
- **U.S. ethanol prices** – Historical prices for New York, Chicago, Gulf Coast and Southern California. Analysis of the price-setting mechanism. Forecast of monthly Midwest ethanol prices.
- **Corn raw material prices** – Historical prices and monthly forecast for the U.S. Midwest.
- **International ethanol prices** – Historical values for Brazilian and European prices.
- **U.S. Midwest ethanol manufacturing economics and corn crush** – Historical economics and monthly forecasts.
- **U.S. biodiesel manufacturing economics.**
- **U.S. diesel / biodiesel prices in the Gulf Coast and Midwest** – Historical and monthly forecasts.
- **European diesel and rapeseed biodiesel** – Historical prices.
- **Brazilian biofuels legislation and prices.**
- **European biodiesel manufacturing profitability**

2. Biofuels Weekly Update

This deliverable keeps clients apprised of changes in the industry on a more immediate basis than the monthly forecast, featuring updated U.S. biofuel prices and manufacturing economics. Contents include:

- Ethanol prices (vs. NYRBOB)
- Chicago ethanol price (vs. Chicago ULR)
- NY ethanol vs. Brazil ethanol FOB price
- U.S. ethanol economics and gasoline blending
- U.S. biodiesel economics and prices
- U.S. Renewable Fuel Identification Number pricing (RIN)
- European ethanol and biodiesel prices
- Brazilian domestic and export ethanol prices

(Note: weeks in which a monthly report is delivered will not have the *Weekly Update*)

3. Special Reports and Presentations

Important industry developments, such as legislation, global production forecasts, manufacturing economics, raw material analysis, impact on energy savings, emerging markets, reduction in greenhouse gases, etc., are discussed and analyzed in detail either regularly (e.g. monthly) or on an “as-events-dictate” basis. These include:

- **Biofuels in Developing Markets** – Delivered typically every two months, this report tracks news and trends in regions other than the U.S., Western Europe, and Brazil, which are covered in the *Global Biofuels Monthly Forecast*.
- **One-off “exposés”** that delve deeply into a certain key topics. Recent reports include:
 - ***Biofuels Mandate Review***
 - ***Implications of RFS Rulemaking***
 - ***Cellulose Ethanol: Technology and Projects***



- *Low Carbon Fuel Standard- Impact on Biofuels*
- *EU Draft Renewable Directive Analysis*
- *Brazilian Ethanol Dynamics*
- *Analysis of U.S. Duty-Free Ethanol Trade*
- *European Ethanol Trade Patterns*
- *Ethanol vs. Gasoline: Savings in Energy Balances and Greenhouse Gas Emissions*
- *A Review of Government Biofuels Policies by Country*
- *World Biofuels Production Forecast*
- Presentations (online PowerPoint slide shows) from recent conferences.

4. World Biofuels Plant Database

A key feature of the Service, the World Biofuels Plant Database includes an up-to-date forecast of existing and planned bioethanol and biodiesel facilities. Thus far, analyses of ethanol plants in the U.S., Europe, Canada, the Caribbean, Thailand and Australia, as well as biodiesel plants in the U.S. and Europe have been completed. Biofuels capacity in other countries will be rolled out when available. Clients have the ability to search listings by year, company, region, country, U.S. PADD, etc.

5. PIRA Online

All reports, data tables, and presentations associated with the Global Biofuels Retainer Service are available to clients through a customized Biofuels Service “portal” on PIRA Online. The portal contains additional information such as global production forecasts and U.S. state mandates. Further, Biofuels clients have access to PIRA’s regularly updated macro data on: currencies; the U.S. economy (by region); U.S. manufacturing; and Canadian, Mexican, European, Japanese, and world economies; a weekly report tracking the performance of equity markets in countries and regions around the world; and temperature maps for U.S., Europe, the former Soviet Union, and East Asia.

All PIRA retainer clients get access to the Energy Price Portal. The biofuels module of the Price Portal provides a short- and long-term view of biofuels prices in the U.S., the leading market for ethanol. They include biodiesel and ethanol in Chicago and ethanol in New York. Short-term monthly forecasts are updated at the end of each month, following the completion of the *Global Biofuels Monthly Forecast* report. Longer-term annual prices to 2020 are updated every quarter following the oil prices update schedule.

6. Access to PIRA Staff

Biofuels Service clients are entitled to contact PIRA's biofuels analysts via email or telephone for information gathering and analytical support.

Fees

The annual fee to receive the Global Biofuels Service is \$19,000, which allows access for up to 10 users located at one client site. (Clients requiring usage beyond “10 at 1” should contact their PIRA representative for a custom quote.) The fee for existing clients to one PIRA retainer service is \$12,000 per year; clients of two or more retainer services pay \$11,000.



Who Can Benefit from the Global Biofuels Retainer Service?

PIRA's Global Biofuels Service keeps clients up to speed with market intelligence and fundamentals analysis that can be relied on to make key decisions easier. And as the industry develops, keeping abreast of current information and market dynamics is crucial for these industry participants:

- **Energy companies — producers, refiners, blenders, storage companies, shippers and traders** — all will be able to make better-informed decisions on where and when to secure biofuels, improving flexibility and diversifying sources for their business.
- **Manufacturers of ethanol and biodiesel** will be able to monitor supply/demand developments and better identify market opportunities. Specifically, the agricultural feedstock and biofuels pricing projections are useful for negotiating contracts.
- **Agricultural companies / biofuel feedstock suppliers** will gain valuable information for marketing biofuels and be in a position to review the possibilities for downstream integration.
- **Banks and financial companies** will be able to better evaluate projects for potential investment or financing opportunities.
- **Technology and engineering companies** can monitor developments in the industry and identify business trends and opportunities.
- **Transportation companies** can assess the impact of the biofuel industry on their businesses.

The Biofuels Group:

Dr. Bruce H. Pickover (Senior Director) has directed the Global Biofuels Service since its inception in 2006. Dr. Pickover began his career at ExxonMobil, where he worked on petrochemicals and the refinery interface. He spent 27 years at consulting company Chem Systems where he was responsible for the Petroleum and Petrochemical Economics (PPE) program, multi-client studies, and commercial proprietary studies. Dr. Pickover has a Bachelors of Chemical Engineering from the City College of N.Y. and a M.Ch.E and Ph.D. from New York University.

David A. Zinamon (Managing Director, Refining and Environmental Affairs) specializes in refined products, refinery operations, NGLs, alternative fuels and environmental matters, particularly as they affect petroleum product markets. Among other activities he is responsible for PIRA's World Refinery Database. Dave also authors PIRA's monthly NGL market report. Dave joined PIRA in 1984 after seven years of international energy consulting experience with Chem Systems. This followed several years of manufacturing, marketing and planning positions with Celanese Chemical, GAF Corp., and Airco. Mr. Zinamon has a B.Ch.E. from City College of New York and an M.B.A. from Rutgers University.

Dr. Ronald B. Gold (Director, Emissions Group) is an international energy economist with broad experience in analyzing energy, economic, and environmental trends. Dr. Gold retired from Exxon at the end of 1997, where he was company economist and Manager of the Energy Outlook Division. Prior, he worked for the U.S. Treasury Department, Office of Tax Analysis, and was also an assistant professor of economics at Ohio State University. Dr. Gold received his undergraduate degree from Brooklyn College, City University of New York, and his M.A. and Ph.D. in economics from Princeton.



Global Biofuels Service

Prospectus

**PIRA Energy Group
Retainer Client Services**

Dr. Mark Schwartz (President) works closely with PIRA's Global Oil and Natural Gas groups to evaluate the key assumptions underlying their outlooks and to develop plausible alternative assumptions and outcomes. Before joining PIRA in 2002, he was the Chief Economist of ExxonMobil Corp., where he was responsible for developing the company's long-range economic and energy outlook. During his 25 years at Exxon he also had assignments in Upstream Planning, Treasurers, and Corporate Planning functions. He holds a Ph.D. in economics from the University of Pennsylvania.

Corey Lavinsky (Senior Analyst) joined PIRA in 2009. He was most recently CEO of Growththink Research, a Los Angeles-based firm that provides a proprietary database of venture-backed companies, funding transactions, and VC executives, directors and advisors. Prior to that, he was an attorney at Klutho, Cody & Kilo (St. Louis). He has a J.D. from the University of Missouri-Columbia and a B. A. in mathematics from SUNY Binghamton.



Global Biofuels Service

Prospectus

PIRA Energy Group
Retainer Client Services

Acceptance Form

We wish to become a client to PIRA Energy Group's GLOBAL BIOFUELS SERVICE, and we understand and agree that the fee for the service is (circle as appropriate). NOTE: **Discounts are available to clients of the Retainer Services listed below:**

- Global Oil
- North American Natural Gas
- North American Electricity
- European Natural Gas
- European Electricity



Company Status	Annual Fee
Non-Retainer Client	\$19,000
Client of One Retainer	\$12,000
Client of Two Retainers	\$11,000

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Company: _____

Name/Title: _____

Address: _____

Phone: _____ Fax: _____

Email: _____

Total Fee: _____

Signature: _____

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