

PIRA ENERGY GROUP

THE LEADER IN WORLDWIDE ENERGY MARKET ANALYSIS



Crude Oil & Petroleum Products



Natural Gas



Electricity



Coal



Emissions



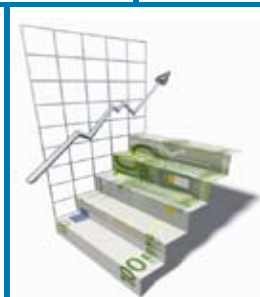
Freight



Retainers



Multi-Client Studies



Project Consulting



Seminars

Energy Consulting Services



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About PIRA Energy Group



HELPING OUR CLIENTS NAVIGATE THE GLOBAL ENERGY MARKETS

PIRA Energy Group, founded in 1976, is an international energy consulting firm specializing in global energy market analysis and intelligence. PIRA's Retainer Client Services are renowned for their comprehensive research and commercial analysis of global crude oil and refined petroleum products, natural gas, LNG, natural gas liquids, biofuels, coal, electricity, emissions and freight markets. PIRA also offers multi-client studies, training programs, and project consulting services that present an unparalleled knowledge of markets and keen commercial insight. This full range of services provides exceptional coverage of key U.S. and global energy issues that impact the behavior and performance of energy markets.

PIRA's insight and expertise in analyzing short-, medium- and long-term global energy markets can be of enormous value to energy analysts, traders, fuel purchasers, strategic planners, and financial experts concerned about energy price movements.

PIRA's senior management and experienced team of respected energy consultants can provide your company with a wealth of valuable information and market perspectives to help it stay ahead of the competition.



WHO IS A PIRA CLIENT?

MORE THAN 500 COMPANIES FROM OVER 65 COUNTRIES



- Oil and gas companies of all sizes — small independents, national oil companies, and multi-national majors
- Refiners
- Trading companies
- Pipeline companies
- Utilities
- Energy marketing and distribution companies
- Government institutions
- Chemical, ammonia and fertilizer companies
- Other manufacturers and industrial end-users of energy
- Airlines
- Investment banks
- Hedge funds
- Mutual funds
- Energy bankers and financiers
- Asset managers

Retainer Client Services



PIRA's Retainer Client Services provide a close and ongoing working relationship between PIRA consultants and client companies. They are designed to keep clients constantly updated on global and regional energy market issues and developments and price movements.

Each of our retainers provides a "basket of deliverables" that include frequently updated analytical reports, fundamentals data, energy price forecasts, news analysis, briefings, access to consultants, and seminars and workshops.

WHAT MAKES PIRA THE WORLD'S LEADER IN GLOBAL ENERGY MARKET ANALYSIS & INTELLIGENCE

- ✔ PIRA provides the most comprehensive and commercially oriented research on energy market fundamentals and price, enabling clients to be ahead of the curve and their competition.
- ✔ PIRA's expertise is in knowing energy markets, as evidenced by the fact that PIRA works with virtually every major energy commodity trading firm in the world.
- ✔ PIRA has over 35 years of experience working with companies in all energy market sectors across the globe.
- ✔ PIRA forecasts energy commodity prices in the short, medium and long term, looking forward monthly for 2 years and annually to 2025.
- ✔ PIRA's research and forecasts are completely independent and unbiased.
- ✔ PIRA's services provide unparalleled analytical support from our energy experts and client services team.

PIRA COVERS THE WORLD'S MAJOR ENERGY COMMODITY MARKETS



- Crude Oil and Petroleum Products
- Natural Gas
- Electricity
- Environmental Markets
- Greenhouse Emissions
- Coal
- Biofuels
- Freight
- Weather

Crude Oil & Petroleum Products



Global Oil Retainer Service



PIRA's flagship service keeps clients constantly updated on world oil market developments through a series of "deliverables" that provide supply/demand fundamentals analysis, price forecasting, and market intelligence on global crude oil and refined products (fuel oil, gasoline, diesel, gasoil, jet kero, distillates).

Deliverables Include:

- Monthly *World Oil Market Forecast*
- Weekly *DOE Analysis*
- Monthly *Western Canadian Crude Price Forecast and PADD II Balances*
- Monthly *European Oil Market Forecast*
- Monthly *Asia-Pacific Oil Market Forecast*
- *China Quarterly Oil Demand Monitor*
- *India Quarterly Oil Demand Monitor*
- *Current News and Analysis* bulletins
- Access to short- and long-term price forecasts for over 30 worldwide crudes and 90 worldwide products
- Annual client seminars
- Strategic briefing

Scenario Planning Service (SPS)



Dedicated medium- and long-term-oriented service that defines and tracks the critical assumptions behind PIRA's long-term global oil and regional gas and coal projections.

As a supplement to our Reference Case forecasts, alternative price scenarios and their probabilities are developed and followed on an ongoing basis, consistent with PIRA's quantitative approach to analyzing markets.

Deliverables Include:

- *Annual Scenario Guidebook* with long-range outlooks
- Quarterly Scenario Tracking reports
- *Current News and Analysis* bulletins
- Annual roundtables (Houston and London)
- Global Gas Database
- Two custom scenario constructions
- Access to the Scenario team

World Refinery Database (WRD)



Provides an in-depth forward view of the international refining business. Offers cutting-edge functionality, delivering capacity data by unit and configuration, detailed ownership status and history, and refinery-by-refinery crude slate and outages data — resulting in a turnkey research tool that is unmatched in the industry.

The unique interactive portal and database covers nearly 1,500 refinery and processing units worldwide.

Key Database Components:

- Historical tracking of ownership and operation of individual refineries
 - Historical breakdown of capacity and process unit configuration
 - Forecast of planned refinery investments, additions and new constructions
 - By-facility historical crude distillation outages
 - Refinery Outage Scenario Manager – a tool to estimate outages for any time period
 - Regional product-quality specifications
 - Regional summary capacity reports for all refineries and processing units
 - Refining margin charts
- Premium access** includes refinery-by-refinery crude slates, runs, and outages data.

PIRA'S FLAGSHIP RETAINER SERVICE
PROVIDES THE MOST UP-TO-DATE
OIL MARKET INTELLIGENCE
IN THE INDUSTRY

Crude Oil & Petroleum Products



World Energy Demand Model - NEW (WED)



As the first of its kind, WED offers the most comprehensive energy demand dataset available anywhere, covering demand at its most detailed and “granular” level — some 2 million data points. WED is updated regularly and provides annual energy demand data by sector, fuel and product for 143 countries, with history back to 1990 and projections through 2025.

WED is the most efficient way to access and analyze PIRA’s latest Reference Case energy demand forecast data and allows users to test their own assumptions and create customized demand scenarios.

Deliverables:

- Coverage of multiple fuels including crude and oil products (19 types), coal (3 types), combustibles, electricity, natural gas, hydro, nuclear, renewables (several sub-categories), and CO₂ emissions
- Analysis of 143 countries
- 9 energy demand sectors
- History from 1990 and forecasts to 2025
- Ability to create user-defined custom demand scenarios
- Economic growth and population history and projections
- Full support by PIRA analysts

Oil Trade Flow Portal



A valuable tool that helps users gain a better understanding of changing oil trade patterns and anticipate future changes. The online portal provides detailed, interactive balances and trade flows for crude and major refined products, both for the short-term (quarterly) and long-term (annual).

Further, the portal allows for user-defined data tables, broken out into 13 distinct regions on refinery product production and yields, crude production and runs, product demand, net inter-regional trade flows, inventory changes and so on.

Deliverables Include:

- Region-by-region balances and inter-regional net trade data
- Quarterly balances forecasts
- Annual forecasts of trade balances through 2025
- Historical annual data back to 1995; quarterly data back to 2004

Oil Product Trading Analyzer (OPTA)



Powerful online research tool for products traders that provides the latest detailed market analysis, light product balances, and prices for petroleum products, including gasoline, RBOB, jet kerosene, distillate fuel oil, and residual fuel oil.

OPTA features current and historical data for production, stocks, demand, exports, and imports, along with PIRA’s latest assessments of refinery margins and turnarounds. Subscribers are able to access current contract prices for futures, cracks, and spreads; moving-average analysis; Commitment of Traders statistics; and worldwide arbitrage model.

Deliverables Include:

- Trading Enhancer, a tool to establish fair market value
- Arbitrage model
- U.S., European, and Japan light product balances
- U.S., European and Japan refinery turn-around data
- Fundamentals/price analysis
- Futures analysis and charts

Crude Oil & Petroleum Products



Freight Market Outlook

(FMO)



Provides the key assumptions and oil flows in PIRA's monthly *World Oil Market Forecast* to analyze tanker demand and develop detailed transportation balances for the major vessel groups.

Tracking and projecting of freight movements and changing fleet demographics allow clients to anticipate changes in the availability and cost of tonnage for different vessel size classes and trades.

The online FMO Portal provides interactive tools for analyzing and downloading short- and long-term freight rate information, chartering data, and other important transportation metrics.

Deliverables Include:

- *Freight Market Outlook* monthly report and freight rate forecast
- *Monthly Dry Bulk Freight Market Forecast*
- Access to Freight Market Outlook Portal

NGL Market Service



Provides an in-depth analysis and forward-looking view of U.S. and European NGL markets, associated price forecasts, and trends for U.S. extraction economics.

Periodic reports and slideshows provide a detailed supply/demand analysis and short-, medium-, and long-term market prices for ethane, propane, normal butane, isobutane, and natural gasoline at Mt. Belvieu, TX, and propane and butane in NW Europe and Mediterranean markets.

Deliverables Include:

- *Monthly NGL Price Forecasts*
- *Monthly NGL Supply and Demand Balances*
- *Monthly NGL Market Developments* slide show
- *Weekly U.S. Propane Stock Report*
- Access to PIRA Online
- Access to PIRA's NGL market analysts

Global Biofuels Retainer Service



Analyzes the commercial aspects of the global biofuels market by monitoring mandates, incentives, demand, supply, capacity, prices, raw materials and market structure in countries with bioethanol and biodiesel programs.

The service focuses on the key areas of the U.S., Brazil and Europe and includes an analysis of other markets as well. Emphasis is placed on reviewing historical U.S. biofuel prices and manufacturing economics and projecting future prices using PIRA's crude oil and refined products forecasts.

Deliverables Include:

- *Global Biofuels Monthly Forecast*
- *Biofuels Weekly Update*
- *Weekly Ethanol Supply Report*
- *World Biofuels Plant Database*
- *Periodic Biofuels in Developing Markets* report
- Special reports on key topics and issues

PIRA'S PREMIUM SERVICES
SUPPLEMENT THE CORE OIL SERVICE
TO GIVE A COMPLETE GLOBAL PICTURE

Natural Gas



North American Natural Gas Retainer Service



PIRA's North American Gas Service keeps clients updated on U.S. and Canadian natural gas market developments, while providing ongoing fundamentals market analysis and intelligence.

The service features short- and medium-term price forecasts and market outlooks, an analysis of the EIA's weekly storage number, and an online database with historical and forecast data on supply, demand, production, and storage for different hubs.

Deliverables Include:

- *North American Gas Forecast Monthly*
- *North American Gas Regional Monthly*
- *North American Gas Trade Monthly*
- *Gas Flash Weekly*
- *U.S. Gas Rig Monitor*
- Access to 21 regional gas price forecasts for the U.S. and Canada
- Annual client seminar
- Strategic briefing

European Natural Gas Retainer Service (ENG)



PIRA's ENG service covers Europe's emerging market for natural gas trade by analyzing market fundamentals and explaining the shifts in market trends that will affect supply, demand and price direction.

Also includes PIRA's respected forecasts for European oil products that help clients on a monthly basis in pinning down prices, identifying key markets for demand growth, as well as potential supply changes, and in understanding the confluence of a well-established infrastructure and a "new market" feel.

Deliverables Include:

- *European Gas Monthly Forecast*
- *Weekly European Gas Price Scorecard*
- *European Daily Electricity Demand Forecast*
- A dynamic database of country-by-country supply, demand, inventory and price data, including spot and oil-indexed price forecasts
- Annual European Retainer Client Seminar

Global Liquefied Natural Gas Service (LNG)



Provides a rigorous fundamentals analysis of worldwide LNG markets. Includes a comprehensive outlook for prices, supply, demand, trade, netbacks and arbitrage, and inter-fuel competition. Service covers both the contract flow of LNG and market-responsive spot trade.

By looking at the fundamentals of energy markets in the Far East, Europe and U.S., PIRA identifies marketing opportunities for LNG suppliers and enables end-users to diversify supplies beyond traditional (i.e. pipeline) gas sources.

Deliverables Include:

- *Global LNG Monthly Forecast*
- *Weekly Global LNG Fundamentals Scorecard*
- *LNG Spot Price Calculator*
- *Global Gas Database*

**PIRA'S NATURAL GAS SERVICES
ANALYZE SHORT- AND LONG-TERM
MARKETS FOR GLOBAL GAS**

Natural Gas



NEW Global Consumer Gas Price Database



The Consumer Gas Price Database meets a growing need to better understand prices in new and emerging gas markets around the world. The service goes well beyond the conventional look at wholesale prices such as NBP, Henry, and oil-indexed gas in Europe and Asia. It provides users access to consumer gas pricing in many countries that have largely isolated domestic gas markets, where gas pricing is not only highly specialized, it is also largely disconnected from global gas benchmarks of both the spot and oil-indexed variety. Without having to consult a myriad of sources and spend hours of time, users of the service have immediate access to updated consumer prices in these disparate markets.

Features Include:

- Prices for +110 countries
- Over 185,000 current and historical prices
- In-country regional data available for major nations, including Russia, China, the U.S. and the E.U., allowing arbitrage calculations within the border
- Ability to create and extract datasets using simple queries for developing offline advanced models
- Integration with PIRA's Energy Price Portal
- Access to PIRA's staff to discuss issues on data-collection and reporting methodologies

Gas Weather Outlook (GWO)



The GWO, produced jointly with MDA Earthsat, provides forecasts of gas storage injections and withdrawals by-region, based on projected weather patterns and heating/cooling degree days throughout the summer injection and winter withdrawal periods.

This service provides insights into the dynamics of the various supply and demand components of the gas market, as well as their interaction with the changes in heating and cooling load.

Deliverables Include:

- Daily report with weekly regional storage levels and forecasts
- Daily discussion of short- and medium-term weather outlooks
- Daily heating/cooling degree-day data and forecasts
- Detailed breakdown of various S&D components for the two upcoming EIA reports

Electricity



North American Electricity Retainer Service



PIRA's North American Electricity Retainer Service provides fundamentals analysis, research, and price forecasting of eastern and western electricity and coal markets. Core analysis is sent to clients monthly in advance of electricity futures contract expiration and geared for companies that value a comprehensive analysis of the fundamentals driving PIRA's 12-month forward price outlooks for multiple delivery points and inter-related fossil fuels markets.

Assumptions about supply (including hydro, nuclear, and gas-fired generation) and demand are explained, as well as their effects on natural gas markets and the impact on generation.

Deliverables Include:

- Monthly *Western Grid Electricity Market Forecast*
- Monthly *Eastern Grid Electricity Market Forecast*
- Monthly *U.S. Coal Market Forecast*
- *Regional Electric Load Estimates*
- New Generation Capacity Database
- Annual client seminar
- Strategic briefing

European Electricity Retainer Service

(EES)



PIRA's European Electricity Retainer Service provides clients with market insights into the developments of power generation, demand, cross-border trading, and prices for Europe's most relevant markets for electricity trade. Focuses on Continental Europe (Germany, Benelux, France, Switzerland, Austria), while data and trends are also covered for the other European countries (Italy, Iberian Peninsula, UK, Nordic countries and Eastern Europe).

The service analyzes generation issues (e.g. availability of hydro, thermal and nuclear plants), demand developments, emerging dispatching patterns and their impact on prices.

Deliverables Include:

- *European Electricity Monthly Outlook*
- *Weekly European Electricity Market Scorecard*
- *European Daily Electricity Demand Forecast*
- Hourly wind forecasts, NuclearWatch, Daily Demand data
- Database of retrofitted units, units opting out of the LCPD and LCPD calculator
- Annual European Retainer Client Seminar

Daily Electricity Demand Report



A premium service offered to eastern and western U.S. electricity market participants, this daily report provides projections seven days forward of peak-hour, on-peak, off-peak and average daily electricity demand for over 30 power market regions and sub-regions in North America. Demand departures from seasonal heating and cooling norms are also provided.

The demand projections incorporate the National Oceanic & Atmospheric Administration (NOAA) seven-day forward model output statistics (MOS), and weather forecasts for more than 100 weather stations around the country.

Deliverables Include:

- *Daily Electricity Demand Forecast* – delivered via email 7 days/week
- Demand departures from seasonal heating and cooling norms

PIRA'S ELECTRICITY SERVICES COVER DYNAMIC NORTH AMERICAN AND EUROPEAN POWER MARKETS

Emissions & Coal



North American Environmental Markets Service (EMS)



EMS provides ongoing comprehensive analysis of short- and long-term fundamental factors (electricity generation, emissions-control technologies, fuel choice, federal and state-level policies) that affect SO₂ and NO_x emissions prices, markets, and assets, as well as those for emerging markets for CO₂ / greenhouse gases and renewables in North America. Special reports cover the impact of policy drivers leading to increased penetration of renewable power.

EMS includes projections of emissions, technology choices, pollution control installations, renewable generation and allowance price forecasts. Additionally, assessments are provided of ongoing clean energy markets and policy developments regarding both emissions and renewable power in the U.S. and Canada.

Deliverables:

- North American SO₂/NO_x Quarterly Update
- North American GHG Quarterly Update
- Monthly U.S. SO₂ Scorecard
- Bulletins and special reports
- North American EMS statistics

Greenhouse Gas Emissions Service (GHG)



Combines analysis of greenhouse gas emissions fundamentals (involving fuel choices, technology developments and economic growth) with an assessment of the existing and prospective policy-making drivers of global emissions markets.

Provides forecasts and timely insights into existing markets — primarily the European Union Emissions Trading System (EU ETS) — as well as markets being developed in response to Kyoto and other domestic/regional initiatives around the globe.

Deliverables:

- Monthly *European Emissions Trading System Market Outlook*
- *North American GHG Quarterly Update*
- Bulletins and special reports

International Coal Service



PIRA's International Coal Service picks up where coal journals leave off by providing an understanding of the complex, ever-changing relationships that interact to determine global price movements.

PIRA methodically analyzes the world's major coal producers and global coal trade and shipping to develop a fundamentals-driven price outlook for international thermal coal markets across the globe. In this way, PIRA provides a structured assessment and outlook that identifies market opportunities for clients, not just for coal, but in electricity, shipping, natural gas and financial markets.

Deliverables:

- Monthly *International Thermal Coal Market Forecast*
- Monthly *U.S. Coal Market Forecast*
- Monthly *U.S. Coal Stockpile Estimates*
- Weekly *International Coal Markets Scorecard*
- Monthly *Dry Bulk Freight Market Forecast*
- An online data "portal" providing regular updates on coal production, consumption, trade, coal prices and shipping rates, port information and over 2,000 shipping distances

**PIRA IS AT THE CUTTING-EDGE
IN ITS COVERAGE OF EMERGING
EMISSIONS AND COAL MARKETS**

ENERGY MARKETS TRAINING SEMINARS

PIRA University (PIRA U) seminars are conducted by PIRA's senior consultants and provide comprehensive market training to entry- and mid-level analysts and managers by covering every phase of the supply chains. Such an understanding is crucial to energy traders, planners, marketers, analysts, and risk managers to perform with the highest level of knowledge.

Understanding Global Oil Markets

Geneva - May 2012

Houston - June 2012

Dubai - October 2012

New York - December 2012

- A two-day intermediate-level training seminar providing an in-depth look at market supply/demand fundamentals and pricing and refining trends.
- An explanation of how PIRA incorporates all of its data and analysis into the development of its own forecasts of near- and long-term crude and product prices and margins.
- The course also includes an extensive discussion of the role of speculators, the impact of geopolitical issues and other risk factors, as well as the development of long-term price scenarios.

Understanding Natural Gas Markets

New York - December 2012

- A two-day training seminar that teaches the essential commercial activities and decisions that tie together volumes and prices in the emerging global gas market.
- Helps clients develop a richer, more in-depth view of what drives North American, European, and Asian gas prices — while also helping them test their own assessments of the outlook for prices.

European Market Workshop

Prague - April 2012

- A two-day intermediate-level workshop providing an in-depth look at European market supply/demand fundamentals and pricing and refining trends.

ANNUAL CLIENT SEMINARS

European Retainer Client Seminar

London - May 2012

- This event is held exclusively for PIRA oil, gas, or electricity clients headquartered in the Eastern Hemisphere.
- This seminar covers PIRA's latest views on crude oil supply/demand and price differentials, regional petroleum product markets, refining outlook, specific trends in gas trade, as well as an outlook for electricity, coal, and emissions markets.

Canadian Retainer Client Seminar

Calgary - June 2012

- Held exclusively for PIRA retainer clients with offices in Canada.
- PIRA reviews its short- and long-term outlook for world crude oil and petroleum products, natural gas, electric power, coal and emissions, with a focus on the Canadian markets. It also examines the major structural changes expected in various world energy markets.

Annual Retainer Client Seminar

New York - October 2012

- This comprehensive seminar includes a plenary session to review PIRA's short- and long-term outlook for world crude oil and petroleum products, natural gas, electric power, coal and emissions markets.
- The seminar features over 25 breakout sessions on specific issues or structural changes taking place in energy commodity markets throughout the world.
- Excel spreadsheets of energy forecasts by region and energy source through 2025, as well as the Seminar presentations themselves (audio and visual), are available via PIRA Online.

Asia Retainer Client Seminar

Singapore - November 2012

- Held exclusively for PIRA retainer clients with offices in Asia-Pacific.
- PIRA reviews its short- and long-term outlook for world crude oil and petroleum products, natural gas, electric power, coal and emissions, with a focus on the Asian markets. It also examines the major structural changes expected in various world energy markets.

Multi-Client Studies



MULTI-CLIENT STUDIES



In addition to its core retainer services, PIRA also delves deep into specific market topics through periodic multi-client studies. Focusing on current major energy markets, regions or issues, PIRA's multi-client studies deliver in-depth research by working with clients to understand their specific interests and needs. The studies go beyond what regular retainer services or reports might cover and identify key developments and market changes, and their anticipated impact on prices.

Each study is led by a team of PIRA's highly experienced experts who provide findings and recommendations that can immediately be applied to the work of the client's organization. A study's production generally involves four to 10 months of research, forecasting, and analysis.

Multi-client studies enable companies to obtain critical energy intelligence at a fraction of the cost of conducting the study themselves.

Each study typically includes:

- Comprehensive written report
- Workshop with PIRA's energy experts
- Access to an online database
- Online presentation via WebEx

RECENT PIRA MULTI-CLIENT STUDIES

- *Bottom of the Barrel: An Updated Outlook for Residual Fuel Oil, 2012 Edition*
- *Tilting the Balances: A Comprehensive Look at Energy in China through 2025*
- *Unconventional LNG: Monetizing North American Gas Exports*
- *Top of the Barrel: The Future for Gasoline, Naphtha, and LPG*
- *Heart of the Barrel: The Future for Middle Distillate Fuels*
- *Planning for Tomorrow: PIRA's Five-Year Outlook for Crude Oil and Refined Product Markets, 2010-2015*
- *The Globalization of Gas: Regional Seasonality, Misplaced Storage, and Emerging Arbitrage*
- *The Changing Face of North American Gas Supply (Four-Part Multi-Client Study)*

Project Consulting Services



TYPES OF PROJECT WORK OFFERED

PIRA's consultants can provide client-customized studies or project work on any range of topics; such work may include:

Market Assessment & Strategy Formulation



PIRA specializes in the expert analysis of critical changes in markets, key value drivers, and the implications for prices and strategy development.

Merger & Acquisition Evaluation



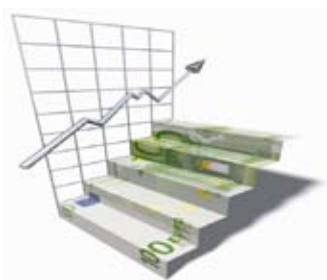
PIRA's extensive knowledge of market structures, industry players and physical infrastructure provides the perfect framework within which to evaluate merger opportunities and investment/divestiture decisions.

Contract Review & Due Diligence Support



With understanding of both short- and long-term market developments and commercial perspective, PIRA supports clients in their analysis and review of fuel, power and financing agreements.

Capacity & Energy Price Forecasts & Financial Models



PIRA generates price forecasts that reflect market conditions and test many scenarios through the use of proprietary pricing models.

Fuel Supply & Transportation Strategies



PIRA's comprehensive understanding of fuel markets and transportation infrastructure (particularly pipelines and LNG) offers critical support as clients develop creative and competitive fuel strategies.

Benchmarking & Competitor Analysis



PIRA examines the competitive framework of the energy business and identifying the drivers that facilitate success. Clients increase the probability of success by learning the strategies and practices of the most successful companies in each segment of the energy business.

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FOR MORE INFORMATION

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