



PIRA's North American Electricity Retainer

A service that keeps clients updated on developments in the Eastern and Western North American electricity, U.S. coal markets, fuel use and inter-fuel competitive developments, while providing fundamental market analysis, market intelligence, and superior client service.

Components of the Electricity Retainer:

Western Grid Market Forecast

Sent to clients monthly—and geared for companies that value a comprehensive analysis of the fundamentals that drive power prices, implied gas heat rates, trade and the power market's impacts on related fossil fuel markets. PIRA uses its proprietary energy and capacity models in preparing these outlooks. The *Western Grid* provides PIRA's fundamental analysis driving our 12-month projections for on-peak and off-peak power prices and implied gas heat rates at Mid-Columbia (WA), California-Oregon Border (COB), SP-15 and NP-15 (California), and Palo Verde (AZ).

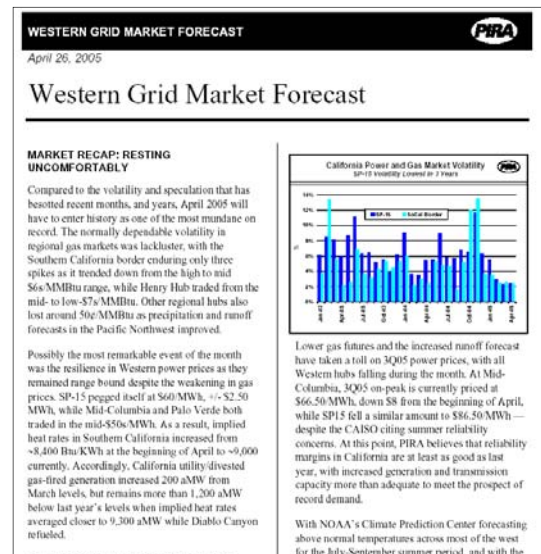
Key assumptions and sensitivities about supply (including hydro, nuclear, coal- and gas-fired generation), and demand/demand response are explained as are their expected impacts on forward prices and heat rates. The impact on gas and coal markets and related generation are also discussed. PIRA has been preparing this monthly analysis for key power decision makers for over 15 years now. Our experience translates into commercial insights that are simply the best available. It is also an invaluable resource for executives, and for training analysts and traders.

Eastern Grid/ERCOT Market Forecast

Like the *Western Grid*, the *Eastern Grid* forecast presents a fundamental analysis of the factors driving PIRA's 12-month forward price outlooks for multiple delivery points in the eastern markets, Mass Hub (NEISO), NYISO: Zones J, G and A; PJM-W; Ontario (IESO); Cinergy-Hub; Northern Illinois Hub; Minnesota Hub; into TVA; Florida/Georgia Border; into Entergy; and ERCOT South. In addition, there is an extensive discussion of inter-fuel competitive factors throughout the various regions of the Eastern Interconnection. These insights are invaluable for anyone seeking cutting-edge analysis of how the eastern/ERCOT markets will impact the natural gas, coal and various emissions markets.

Long-Term Electricity Forecasts

PIRA prepares long-term forecasts of load, resources, on-peak and off-peak power prices, and related implied gas heat rates for all major hubs throughout the Eastern, Western and ERCOT interconnections. Our current planning horizon extends 15 years forward. PIRA also prepares forecast updates periodically when significant changes occur in the power fundamentals.



U.S. Coal Market Forecast, and Coal Stockpile Estimates

Monthly market outlook that provides analysis and data on a wide range of issues affecting supply, demand, balances, and, ultimately, prices of coal in the various U.S. coal supply basins, the consuming regions, and developments in metallurgical coal and related thermal markets and trade.

Coverage includes SAPP, NAPP, CAPP, ILB, SPRB, and other basins (including Central Interior basins, several western supply basins (CO/UT, southern WY, MT and AK) as well as the lignite basins. Features detailed tabular data (historical and forecast) and price forecasts for 2 CAPP products, NAPP (Pitt 8) and ILB products, and 8,400 Btu/# and 8,800 Btu/# SPRB products.



A complement to both PIRA's regular power grid and emissions market coverage, the *U.S. Coal Market Forecast* explains the interplay of factors such as production, sulfur dioxide and nitrogen oxide credit trading, weather, transportation, natural gas competition, and the economy. Also included is our monthly *U.S. Coal Stockpile Estimates* which provides estimates of stocks in 10 regions along with their possible implications on coal pricing.

Regional Electric Load Estimates

PIRA gathers hourly demand and weather data in order to calculate changes in structural electric loads. The data include our estimates of weather-adjusted loads for three provincial power markets (Ontario, Alberta and British Columbia) and for nine U.S. ISOs/regions. In addition, the report provides sub-regional detail for those markets where we can acquire disaggregated load data (NYISO, PJM and ERCOT). It is released twice monthly (the first and third week of each month), roughly after we have collected half of calendar month's data and after we have gotten a full calendar month's data.

Special Electricity Reports and Market Updates

As a part of PIRA's electricity research agenda, the Electricity Group produces special electricity reports. These timely reports analyze important issues that impact and could impact future electricity markets. Recent examples of such reports are: *EPA to Regulate Coal Combustion Residues?*; *“Demand Response Programs and Potential; Nuclear Power in the U.S.: Revival or Dead-on-Arrival?”; Wind Integration and Electric Generation.* Market updates are prepared periodically to alert clients to material changes in PIRA's western and eastern/ERCOT power market outlooks.

Phone/Email Access to PIRA's Electricity Group

An essential part of all PIRA Retainers, access to PIRA's staff allows clients to obtain quality analytical support on the latest developments in short-term supply and demand, facilitating a more productive use of their time. Clients can discuss PIRA's latest thinking on short-term electricity markets in the western or eastern grids, as well as long-term market information. Clients can also request research on special topics with a quick turnaround, and can arrange for conference calls with our market analysts.



NORTH AMERICAN ELECTRICITY

PIRA ENERGY GROUP RETAINER CLIENT SERVICES

PIRA Online

PIRA's Internet-based information service gives Retainer Clients exclusive, timely and convenient access to PIRA's analysis and price forecasts for North American electricity markets. PIRA Online is the easiest way for clients to take advantage of multiple-user, multi-site licenses.

The Energy Price Portal

A key online feature of the North American Electricity Retainer is the Energy Price Portal, which allows **quick access to short- and long-term electricity price forecasts, all retrieved at the individual user's discretion.**

Users of PIRA's Energy Price Portal benefit from quick and easy access to PIRA's latest price forecasts, the ability to create and store custom price spreads using the Price Equation Manager and options to view data in 16 different currencies or in different units.

The Energy Price Portal also features **PIRA's Equation Manager, a specially designed utility that allows users to define, analyze and store up to 100 custom price spreads** in the form of multi-variable equations that use PIRA's forecast prices.

With the Equation Manager, for example, **users can store individual configurations and use these spread relationships as a predictive tool** in forecasting price developments.

In a matter of seconds, users can create and export large data sets in Excel, CSV, and PDF formats as well as have click-of-the-mouse charting capabilities. The Portal's forecast horizons include both short-term (monthly averages to December 2010) and long-term (annual averages to 2025).

Date	Belgium Average	Dutch Gas at German Border	European Div. Average	German Border	Italian Average	Norway Gas at German Border	Russian Gas at German Border	TTF Div. Ahead	UK NBP Div. Ahead	Zeelkroop Div. Ahead
Jan-10	10.10	11.12	6.38	7.82	9.78	6.00	9.49	6.06	6.42	6.36
Feb-10	10.63	10.98	5.59	6.69	10.29	8.29	10.02	5.62	5.60	5.56
Mar-10	11.06	11.04	4.83	5.46	10.76	8.60	10.45	4.83	4.87	4.79
Apr-10	11.37	11.35	4.31	5.65	11.26	8.75	10.76	4.44	4.21	4.29
May-10	11.71	11.36	4.42	9.87	11.69	8.85	11.10	4.54	4.31	4.40
Jun-10	11.91	11.67	4.80	10.00	12.06	8.98	11.30	4.52	4.69	4.78
Jul-10	12.14	11.88	3.93	10.22	12.27	9.07	11.53	4.05	3.82	3.92
Aug-10	12.28	12.44	3.81	10.43	12.53	9.21	11.68	3.93	3.70	3.80
Sep-10	12.38	12.28	3.93	10.61	12.70	9.31	11.77	4.05	3.81	3.92
Oct-10	12.56	12.63	4.49	10.90	12.97	9.47	11.95	4.62	4.39	4.47
Nov-10	12.71	13.03	5.12	11.08	13.21	9.68	12.10	5.24	5.01	5.10
Dec-10	12.79	13.21	5.29	11.27	13.36	9.90	12.18	5.51	5.28	5.27
Jan-11	12.87	13.72	5.51	11.43	13.56	10.07	12.26	5.59	5.42	5.52
Feb-11	12.94	13.57	5.00	11.59	13.72	10.25	12.33	5.07	4.92	5.01
Mar-11	13.01	13.53	4.63	11.70	13.93	10.40	12.40	4.69	4.55	4.64
Apr-11	13.10	13.43	5.01	11.76	14.14	10.50	12.48	5.06	4.94	5.04
May-11	13.20	13.43	4.89	11.78	14.31	10.59	12.58	4.94	4.82	4.92
Jun-11	13.29	13.43	4.06	11.76	14.43	10.63	12.68	4.10	4.00	4.08
Jul-11	13.24	13.43	4.61	11.67	14.56	10.67	12.73	4.65	4.54	4.63
Aug-11	13.33	13.43	4.56	11.67	14.66	10.67	12.72	4.61	4.49	4.58
Sep-11	13.35	13.43	4.61	11.69	14.73	10.66	12.74	4.66	4.54	4.63
Oct-11	13.36	13.43	5.47	11.70	14.76	10.66	12.75	5.53	5.39	5.48
Nov-11	13.36	13.43	6.42	11.70	14.74	10.66	12.75	6.49	6.33	6.43
Dec-11	13.36	13.43	6.50	11.70	14.75	10.66	12.75	6.57	6.41	6.51

Results for short-term European natural gas wholesale prices

Date	Belgium Average	Dutch Gas at German Border	France (1 MIMCM per Year; 50% Load; Firm)	Italian Average	NBP Monthly Index	Custom Spread
Jan-10	10.10	11.12	9.87	9.78	5.07	45.94
Feb-10	10.63	10.98	10.26	10.29	5.77	47.93
Mar-10	11.06	11.04	10.25	10.78	5.19	48.33
Apr-10	11.37	11.26	9.52	11.26	4.41	43.41
May-10	11.71	11.36	9.05	11.69	4.66	47.18
Jun-10	11.91	11.67	8.97	12.06	4.61	44.61
Jul-10	12.14	11.88	9.27	12.27	4.56	45.56
Aug-10	12.29	12.14	9.39	12.53	4.65	46.55
Sep-10	12.38	12.28	9.62	12.70	4.71	47.18
Oct-10	12.56	12.63	10.01	12.97	4.81	48.16
Nov-10	12.71	13.03	10.25	13.21	4.90	49.20
Dec-10	12.79	13.21	10.48	13.36	4.96	49.86
Jan-11	12.87	13.72	10.99	13.56	5.14	51.14
Feb-11	12.94	13.57	11.09	13.72	5.13	51.33
Mar-11	13.01	13.53	11.05	13.93	5.12	51.52
Apr-11	13.10	13.43	10.37	14.14	5.03	51.03
May-11	13.20	13.43	9.95	14.31	5.09	50.89
Jun-11	13.29	13.43	9.35	14.43	5.09	50.49
Jul-11	13.24	13.43	9.21	14.56	5.04	50.54
Aug-11	13.33	13.43	9.10	14.66	5.02	50.52
Sep-11	13.35	13.43	9.29	14.73	5.08	50.80
Oct-11	13.36	13.43	9.57	14.76	5.12	51.12
Nov-11	13.36	13.43	10.19	14.74	5.12	51.72
Dec-11	13.36	13.43	10.82	14.75	5.27	52.37

PIRA's Price Equation Manager



North American Electricity prices contained in the Energy Price Portal are listed below:

NORTH AMERICA

East

Cinergy Hub	Mass. Hub (New England)	Ontario
ERCOT South Zone	Minnesota Hub	PJM West Hub
FLA/GA Border	Northern Illinois Hub	
Into Entergy	NY Zone A	
Into TVA	NY Zone G	
	NY Zone J	

West

COB
Mid-Columbia
NP15 (Cal)
Palo Verde
SP15 (Cal)

Some of the reports and data available online include:

- *Western Grid Market Forecast*
- *Eastern Grid Market Forecast*
- *Regional Electric Load Estimates*
- **Electricity Special Reports**
- *U.S. and Canadian Electricity Supply/Demand, Balances & Implied Heat Rates*
- *U.S. Coal Market Forecast*
- *U.S. Coal Stockpile Estimates*
- **Annual New York Retainer Client Seminar Electricity Presentations**

New Generation Capacity Database

Tracks planned, under-construction, commercially in service, and retired generation in North America. Available upon request.

Strategic Briefings

Brings PIRA's senior consultants and clients together privately to discuss PIRA's latest thinking on short, medium-, and long-term electric power markets. Briefings are designed to address each client's specific interests, assessing how markets impact their business and examining specific topics as requested.

Annual Retainer Client Seminar

Held every October in New York, the Seminar presents PIRA's medium- and long-term view of oil, natural gas, coal, and electricity markets. Excel spreadsheets of world energy forecasts by region and energy source through 2025, as well as the Seminar presentations themselves (audio and visual), will be available via the Web. The Seminar also examines the major structural changes expected in various world energy markets. The event is an opportunity for clients and PIRA's staff to engage in dialogue on energy markets, as well as an ideal time for industry colleagues to connect with one another.



Discounts on PIRA's Other Retainers and Multi-client Studies

Electricity Retainer Clients get significant discounts when adding other Retainers (Global Oil, North American Natural Gas, European Natural Gas, European Electricity, and Scenario Planning Service) to their service package. They also receive discounts on PIRA's highly valuable multi-client studies.

Fees

Existing PIRA Retainer Clients may subscribe to North American Electricity under discounted terms, which are determined by the scope of their current license. For prices and further information, please contact your PIRA Account Executive.

North American Electricity Group:

Allan M. Stewart (Executive Director) is responsible for the analysis of electric power and fuels markets and the servicing of PIRA's clients on electric power and related fuels markets. He joined PIRA in 1992. Prior to joining PIRA, he worked for 19 years with the Consolidated Edison Company of New York in a wide variety of senior positions involving supply acquisition, planning, business development, marketing, rates, engineering, and operations. Mr. Stewart is a recognized leader on North American electricity, coal and energy fundamentals, who worked with the Bush Administration in formulating solutions to the then western energy crisis. He has a Bachelor of Science degree in civil engineering, an MBA in finance and investments, taken post-Masters coursework in economics at New York University, and completed Executive Management courses at Penn State University and IBM.

Morris J. Greenberg (Managing Director) has developed short-term and long-term regional electricity-pricing models based on detailed analysis of North American electric supply, demand and pricing. He has over 25 years of experience in consulting, planning and finance, most recently as Vice President and Senior Energy Analyst at Lehman Brothers and Director of the WEFA Energy Group. Mr. Greenberg has a BS in Economics from the Wharton School, University of Pennsylvania and an MS in Economics from Temple University.

Bob Roth (Senior Director, U.S. Coal Market Forecast) constructs PIRA's long-term coal view for U.S. coals and collaborates to develop a short- and long-term view of international thermal coals that are fully consistent with the views on U.S. coals. Bob came to PIRA in 2008 from Louis Dreyfus Highbridge Energy Services, where he was Director of Coal Analytics. He was responsible for global coal and emission analytics within LDH Energy. Prior to LDH, Bob was Director of Energy Economics at Peabody Energy Corporation. He was responsible for the development of Peabody's U.S. coal demand model and analysis of the energy marketplace and regional coal markets. He holds an MS and a BS in economics from Illinois State University.



Roman Kramarchuk (Managing Director, Global Emissions) joined PIRA in 2005, coming from the U.S. EPA's Clean Air Markets Division, where he was extensively involved in the development of the Clear Air Interstate Rule, Clean Air Mercury Rule and the BART Guidelines for the power sector - with a special focus on cap and trade approaches to pollution control. Previously Mr. Kramarchuk worked in the merchant power sector, providing market analysis of power and natural gas markets with PG&E NEG. As a consultant with PA Consulting / PHB Hagler Bailly he helped evaluate power sector fuel choice, allowance prices, capital investments in pollution control equipment and generating unit operating decisions and advised clients interested in power plant development and acquisition, transmission expansion and asset valuation within various North American markets. Mr. Kramarchuk has also spent several years overseas, working on USAID and World Bank-funded projects to develop power markets, market rules and regulatory capacity in Ukraine, Armenia and India. Mr. Kramarchuk has a MPP degree from the Kennedy School of Government at Harvard and a BA in Economics and BSE in System Engineering from the University of Pennsylvania.

Jake Jian (Senior Analyst) joined PIRA in October 2010 as a senior analyst in the North American Electric Power Group. He will be conducting market research and writing up market analysis for the group's major reports. Prior to joining PIRA, Jake worked at Morgan Stanley, where he conducted data analysis and built financial models for stock options. Jake holds a M.A. in statistics from Columbia University, a M.A. in economics from Boston College, and a B.A. in economics from University of Virginia.

Meghan Schloat (Analyst) is responsible for conducting research for PIRA's long-term forecasts, special electricity papers, preparing sections in the grid reports, and maintaining a number of databases (including our generating capacity database). Prior to joining PIRA in 2010, Meghan worked as a Policy Manager of U.S. Regulatory Affairs at EcoSecurities Group plc. Meghan has Masters of Public Administration in Environmental Science and Policy from Columbia University and a B.A. in Cognitive Science from the University of Pennsylvania.

Victoria Watkins (Director) focuses on short-term market fundamentals, contributing to the *Western Grid Market Forecast*. She came to PIRA from Pacific Gas and Electricity Company in 1996, where she carried out a wide range of market analyses, playing a key role in organizing development of the first wholesale electricity market index and NYMEX electricity futures contract for the Western U.S. Before PG&E, she served as a manager of power generation operations in the U.S. Air Force in the U.S. and South Korea. Victoria holds a BA from the University of Southern California and an MBA from Harvard Business School.