



# POWER & NATURAL GAS FUNDAMENTALS

Presented by Energy Management Institute



*Get a comprehensive view into the inter-workings of the U.S. gas and power industries as well as the key factors that make up the gas and power markets of today and tomorrow.*

## COURSE DATES & LOCATIONS

- March 21-22, 2017: Houston, TX
- June 12-13, 2017: Houston, TX

**REGISTER TODAY!**

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DETAILS INSIDE



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## What You Will Learn

This course provides comprehensive hands on instruction, lecture and real-life examples that bring to life the entire gas and power market complex. This course provides introductory level participants with a comprehensive view into the inter-workings of the US gas and power industries. Beginners will learn the essentials and key factors that make up the gas and power markets of today and tomorrow.

Topics covered during this course include:

- Physical power basics - Basic industry facts and terminology.
- Power market fundamentals.
- Standard power market design - Deregulated markets in the US and Canada.
- Trading mechanics - A focus on the mechanics and vocabulary of trading.
- Hedging - The art of getting what you asked for.
- Physical power basics - Basic industry facts and terminology.
- Power market fundamentals.
- Standard power market design - Deregulated markets in the US and Canada.
- Trading mechanics - A focus on the mechanics and vocabulary of trading.
- Hedging - The art of getting what you asked for.
- Physical natural gas basics - Basic industry facts and terminology.
- Physical/financial trading of natural gas.
- Natural gas operations and logistics - Basics of interstate transportation.
- Natural gas trading and optimization - The buying and selling of natural gas.

## Who Should Attend

This course will benefit anyone seeking a top to bottom, fundamental education in the natural gas and power industry. Perfect for those new to the industry: Wholesale power and/or natural gas marketing companies, utilities, generation, supply and distribution personnel, traders, end-users, commercial companies, cogeneration, industrial companies and government agencies. Great for new hires, interdepartmental transfers, finance management, administrative personnel, and human resource personnel.

## CPE Credits



**This course earns 9 CPE credits.**

Energy Management Institute is registered with the National Association of State Boards of Accountancy (NASBA) as a sponsor of continuing professional education on the National Registry of CPE Sponsors.



State boards of accountancy have final authority on the acceptance of individual courses for CPE credit. Complaints regarding registered sponsors may be addressed to the National Registry of CPE Sponsors, 150 Fourth Avenue North, Suite 700, Nashville, TN, 37219-2417. Web site: [www.learningmarket.org](http://www.learningmarket.org).

## COURSE DATES & LOCATIONS

■ **March 21-22, 2017 - Houston, TX**  
8:30am-4:30pm

■ **June 12-13, 2017 - Houston, TX**  
8:30am-4:30pm

*See last page for venue addresses.*

**REGISTER ONLINE**

## EMI CERTIFICATION CREDIT



This course earns 6 credits towards EMI Certification.

Not enrolled? Learn more about EMI's Certification Program and enroll today at [cert.emi.org](http://cert.emi.org)

## REGISTRATION FEES

1st delegate: \$1,995

2nd delegate: \$1,795

3rd delegate: \$1,600



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## Course Syllabus

### Session 1: Physical Power Basics

We'll start by exploring basic industry facts and terminology

1. What is a watt? A megawatt-hour? A Btu?
2. Why is load/load factor so important?
3. Major players in the power market today.

### Session 2: Power Market Fundamentals

1. US regional generation mix.
2. What is heat rate and how does it impact power prices?
3. Marginal cost – Coal vs. Gas.
4. Wind/solar generation and their impact on the grid.
5. Will storage be cost effective (someday)?
6. How does reserve margin help to provide reliable power?
7. Capacity additions/retirements.
8. Demand-side management programs and their benefits.
9. Supply stack and power prices.
10. What is the significance of implied heat rate? How is implied heat rate calculated?
11. Demand growth (or lack thereof) in the US.

### Session 3: Standard Power Market Design

Deregulated markets in the US and Canada:

1. How are nodes, zones and hubs used in SMD markets?
2. The realities of regulatory capacity.
3. Why is Locational Marginal Price (LMP) so important?
4. Day Ahead/Real Time – The two-settlement system.
5. Two-settlement example.
6. The need for ancillary services to keep the lights on.

### Session 4: Trading Mechanics

A focus on the mechanics and vocabulary of trading:

1. What are futures, forwards and swaps?
2. Financial versus physical products and how they are traded in the marketplace.
3. Eastern/western interconnect – Differences and similarities.
4. Wholesale product definitions.
5. Bid/ask spread – What it is and what it implies in the market.
6. Long, short and flat – You've got to know your position!
7. What is a spread trade? How is it used in the marketplace?

### Session 5: Power Hedging

The art of getting what you asked for:

1. Minimum risk policies necessary for a successful hedging program.
2. Hedging example: End user.
3. Regulatory framework and its affect on power trading.
4. Regulated power/de-regulated power.

### Session 6: Physical Natural Gas Basics

We'll start by exploring basic industry facts and terminology:

1. Combustion of natural gas.
2. Chemical properties of natural gas.
3. Where does gas come from?
4. How are wellhead and pipeline quality gas different?
5. Conventional and non-conventional supply of natural gas.
6. US/world reserves.
7. Natural gas infrastructure and transportation in North America.
8. The rapidly changing world of US and global LNG markets.
9. Common measurements/conversions for natural gas.
10. US consumption of natural gas.
11. Why is the price going up (or down)?

### Session 7: Physical/Financial Trading

1. Physical vs financial transactions.
2. NYMEX futures market – Natural gas.
3. Where is this Henry Hub? Why is Henry Hub so important to the North American gas markets?
4. The natural gas basis markets and how they trade/ How trading Hubs are used in the gas industry.
5. The use of derivatives in gas trading today.

### Session 8: Natural Gas Operations and Logistics

Basics of interstate transportation:

1. How is gas scheduled on pipelines?
2. How to balance gas transportation agreements.
3. What are the services offered by pipelines?

### Session 9: Natural Gas Trading and Optimization

The buying and selling of natural gas:

1. What are the trading products used in the gas industry?
2. Swing, base load and firm contracts – Benefits and features of different types of sales agreements.
3. Fixed or floating?
4. World of assets – How the industry uses storage and capacity to maintain reliable delivery of gas.



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## *Learn From the Experts that Experts Trust*

EMI experts are frequent editorial contributors to petroleum magazines and are trusted by today's leading news sources.

Our experts have been featured in:

Futures Magazine • The Wall Street Journal • USA Today • The New York Times • The Washington Post • Journal of Commerce • CNN • NBC • CBS • ABC • Bloomberg • Reuters

**EMI's leading industry experts** have an average of over 30 years of knowledge and experience in:

**Energy • Commodity trading • Risk management  
• Education • Consulting • Financial services**

Plus many years of managing marketing, international trading, manufacturing, consulting, start-up operations and project finance operations of well-known companies; integrated major oil companies as well as international trading companies.

EMI's industry experts have also provided risk and value management analysis, advice, information, and services to a variety of companies in the electric power industry. Clients have included power marketers, integrated utilities, retail power providers, hedge funds, and power plants.

**Highlights of our instructors' experience** include: • Developing a suite of models for a variety of power markets that quantify value and risk • Managing spark spread portfolios for hedge funds in the power markets • Operating in futures trading pits as a market observer in the power markets • Developing working papers for investigations and performing compliance audits in the power industry • Helping Texaco initiate its first use of futures exchanges as an integral part of hedging/trading strategy • Chief Operating Officer of Triwell Marketing and refining • Director of OPIS, Oil Price Information Service, a management-consulting and educational services group that solely focused on the downstream energy industry • Member of Board of Directors of Longview Refinery • Member of the New York Mercantile Exchange Petroleum Advisory Board • Expert witness for a hearing before the subcommittee on surface transportation for the Commerce, Science, and Transportation Committee of the US Senate • Supplied expert testimony to a US Senate sub-committee hearing on diesel petroleum product pricing • Supplied testimony to the Federal Highway Administration regarding fuel tax evasion • Expert witness in a MTBE litigation against the major oil companies • Publishers of The Daily Hedger, BTU's Daily Gas Wire and BTU's Daily Power Report, which advise thousands of petroleum professionals daily.

Our instructors are frequent expert speakers for numerous petroleum industry events and trade associations including: • DOE DESC World Energy Conference • OPIS Fleet Fueling • CME NYMEX • Fuel Management University • NATSO • ATA • AAA • Dairy Distribution • eyeforEnergy eCommerce • OPIS Supply Summit • CIOMA • American Society of Mechanical Engineers • American Society of Lubricating Engineers • Ambrust Aviation • NACHA.

Over the years EMI has developed a series of intensive courses covering all aspects of Energy from production all the way to managing the impact price and volatility on the margin of end-users, resellers, traders, marketers, shippers, retailers and refiners. Our instructors have had the privilege to instruct thousands of professionals representing all aspects of the energy industry, including every major oil company (i.e. Exxon Mobil, BP, Shell, Equilon, Motiva) major power utilities (i.e. Sempra, Edison Mission, Berkley, Toronto Hydro, Dominion, Conectiv) small marketers (i.e. Sprague, Getty, Southern Counties, Western Petroleum) trucking fleets from 50 to 10,000 (i.e. UPS, U.S. Postal Service, Yellow, Pepsi, Werner), gasoline-powered fleets hyper-markets (i.e. The Pantry, Wawa, BJs Wholesale) and many fortune 500 energy consumers.



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**REGISTER ONLINE**

## Registration Fees:

1st Attendee: \$1,995 for full program

2nd Attendee: \$1,795

3rd Attendee: \$1,600

## 1 CHOOSE YOUR COURSE DATE/LOCATION

**March 21-22, 2017**

**Regus Conference Center**  
800 Town and Country Blvd.  
Suite 300  
Houston TX 77024  
PH: 832.431.3000

**June 12-13, 2017**

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Suite 300  
Houston TX 77024  
PH: 832.431.3000

Hotel recommendations for select course locations available online at [www.energyinstitution.org/hotels](http://www.energyinstitution.org/hotels)

## 2 ENTER ENROLLMENT DETAILS

First Name: \_\_\_\_\_ Last Name: \_\_\_\_\_

Company Name: \_\_\_\_\_

Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

Phone: \_\_\_\_\_ Fax: \_\_\_\_\_ Email Address: \_\_\_\_\_

## 3 MAKE PAYMENT CHOICE

Please invoice my company (payment must be received prior to course date)

Pay by credit card (circle one):    Mastercard    Visa    American Express

Card Number: \_\_\_\_\_ Expiration Date:    /    /

Card Holder Name: \_\_\_\_\_

Card Holder Signature: \_\_\_\_\_

## 4 SUBMIT REGISTRATION FORM

EMAIL:    Send form to [register@pmaconference.com](mailto:register@pmaconference.com).

TEL:    Call PMA Conference Management at 201.871.0474

FAX:    253.663.7224

POST:    PMA Conference Management  
POB 2303  
Falls Church, VA 22042

### REFUND/CANCELLATION POLICY

Attendees may reschedule for a different date or course with no penalty. Attendees may substitute a colleague in place of themselves as long as prior notice is given to EMI.

Course fees are 100% refundable up to 14 days prior to course date, 80% refundable up to 5 days prior to course date and 50% refundable up to 2 days prior to course date. Cancellations are non-refundable thereafter.