

## Introduction to Natural Gas Trading & Hedging

November 13-14

**Register  
On-line**

**The Marriot San Diego Gaslamp Quarter Hotel  
San Diego, CA**

Successful natural gas portfolio management requires the ability to recognize and manage risk as well as the knowledge and skills to exploit opportunities to enhance portfolio value. Natural gas enjoys a robust, thriving, and largely transparent market offering a wide array of financial products to manage natural gas associated risks and extract incremental value. In this seminar, we will isolate the portfolio components of fixed price, basis, transportation and storage to exploit financial structures that accomplish both risk control and cost management.

The program concludes with a trading session in which participants will actively engage in a realistic trading simulation in competition with other class participants.

*(Participants will need access to a laptop computer running Microsoft Excel)*

*Detailed Seminar Outlines Below*

**+\$495 Value**

**Includes Comprehensive  
Reference Textbook**

**4<sup>th</sup> Person Free**

**3 Signups from Your  
Organization & 4<sup>th</sup> is Free**



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**Day 1****Natural Gas Risk and Forward Prices*****Enterprise Risk***

- The concept of risk
- Categories of risk faced by energy companies
- Interdependence of risk in the energy enterprise
- Identifying price risks

***The Dealing Process***

- Bid-offer spreads
- Role of brokers, dealers and market makers

***Forward Pricing Concepts***

- Arbitrage discipline in forward pricing of commodities
- Understanding why natural gas prices deviate from theory
- Limitations to the ability to arbitrage
- The 'Fear Factor': physical (delivery) risk

***The Forward Price Curve for Natural Gas***

- Seasonality
- Synthetic forwards
- Long-term backwardated and contango natural gas curves
- Valuing and marking to market risk position using the forward curve
- Using the forward price curve to develop hedge tactics
- The role of forward prices in capital budgeting

**Swap Structures in Natural Gas*****The Financially Settled Contract***

- The swap structure
- Indifference between Index cash flow and physical natural gas
- Advantages of the swap hedge versus fixed-price physical
- Understanding box & arrow swap hedge diagrams
- Unbundling and separating physical risk from financial risk
- The swap as the collapse of two physical trades
- Calculating the all-in pricing with a swap
- How swaps are quoted

***Pricing a Swap***

- Creating a fair value exchange
- The role of the forward price curve
- The index price reference

***Swing Swaps***

- Intra-month swaps referencing Gas Daily prices
- Calculating a Gas Daily Average
- Balance of Month (BOM) swaps

**Group Review**

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**Day 1****Location Basis and Basis Trading Structures*****Understanding Location Basis***

- Defining location basis
- Basis as synthetic transportation cost
- Basis risk

***Basis Trading Structures***

- The basis swap in natural gas
- Pricing basis trades from price curves
- Quoting convention for basis swaps in natural gas
- Basis spreads in natural gas vs. basis swaps
- Quoting basis spreads
- How a basis swap and a basis spread lock in transport cost

***Using Basis Swaps to Price Natural Gas***

- The basis risk of hedging at the Henry hub
- Using the basis swap to secure a fixed-price for gas
- Benchmark pricing for natural gas
- Adjusting gas prices for non-benchmark gas sales

***Using Basis Swaps to Optimize Risk Taking***

- Synthetically relocating risk exposures
- Selling Rocky Mountain gas indexed to Appalachian prices
- Multiple fuel basis-like swap structures
- Selling Rocky Mountain gas indexed to MISO power prices

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## Day 2

**Basis Trading & Natural Gas Pipeline Transport*****Basis Spreads and Pipeline Transportation***

- Cost of moving gas financially
- Understanding pipeline tariffs
- Calculating fuel charges and capacity gross ups
- Total cost of moving gas using the pipeline
- Pipeline capacity as a long basis position
- Pipeline capacity as a long option position

***Review of Option Basics***

- Option as payout asymmetries
- Structure and payouts of calls and puts
- Hedging natural gas risk positions with options
- Cost/revenue profiles of risk positions hedged with calls or puts

***Options on Basis***

- Calls and puts on basis spreads
- Identifying embedded options
- Basis options embedded in supply contracts
- Real options

***Pipeline Capacity as Option on Basis***

- Pipeline capacity owners have a long call on basis
- Pipeline as a 'chooser' option

***Swing Swaps and Swing Swap Options on Basis***

- Gas Daily swaps
- Gas Daily basis swaps
- Options on Gas Daily basis spreads

***Pipeline Segmentation***

- Implied transport cost embedded in a price of delivered gas
- Cost minimization using basis swaps
- Choosing between pipeline and basis transport for pipeline segments
- Backhauling as transport arbitrage to reduce transport cost

**Group Review****Time Spread Trading & Storage*****Time/Calendar Spreads***

- Time spread and seasonal spreads
- Buying and selling a time spread

***Storage and Time Spreads***

- Storage as a long time spread position
- Time spread as a cost of synthetic storage
- Adjusting for time value of money
- Comparing the cost of storage vs. using time spreads
- Storage as an option on time spreads

***Storage Arbitrage***

- Arbitrage opportunity because forward gas price is not arbitrage-free
- The cost of storing synthetically
- Packaging synthetic storage
- Synthetic storage as lending

***Managing Storage Using Time Spreads***

- Using storage to fix a time spread
- Increasing storage margins using time spreads
- Swing swap options as alternative to storage

***Short Term Storage Strategies***

- "Park-and-Loan" programs
- Trading for value using "Park-and-Loan" programs
- Intentional imbalance to extract value

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**Day 2****Hedging Risk with Natural Gas Futures*****The Henry Hub Natural Gas Futures Contract***

- Origins of futures exchanges
- The natural gas contract
- Contract specifications

***Margining and Credit Risk***

- Default risk mitigation
- Original margin
- Maintenance/variation margin
- Exchanging credit risk for cash liquidity risk
- Implications of margins on cost

***Using Futures to Hedge***

- NYMEX Standard Delivery
- Delivery procedure
- Alternate delivery procedure
- Futures as a 'paper' hedge
- Managing cash-futures basis
- NYMEX "Look-Alike" swaps
- Comparing futures against swap hedges

***EFP's and EFS's***

- Exchange of Futures for Physical (EFP)
- Execution risk with futures when dealing away from the Henry Hub
- Pricing and executing an EFP
- Exchange of Futures for Swaps (EFS)

***Other Floor Traded Natural Gas Products***

- Options
- Strips

***Natural Gas On-Line Trading***

- Henry Hub swap futures (outright)
- Henry Hub Penultimate swap futures (outright)
- Index swap futures
- Basis swap futures
- Swing swap futures

***Clearing OTC Transactions***

- Managing Over the Counter Credit Risk

**Group Review****Trading Simulation*****Understanding Trading Concepts***

- The dealing process
- Understanding and working under VaR trading limits
- Factors affecting natural gas prices
- Storage levels
- Weather
- Reading and understanding historic price charts
- Developing trading strategies
- Performance metrics

***Trading Game Session***

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# About Paradigm and Our Instructors

Paradigm provides practical non-theoretical training in energy derivatives, and their related risk management technologies. Programs are structured to the specific needs of today's dynamic energy industry and are designed to excite participants by knocking down the myths and mystiques built around derivative products. Paradigm's instructors offer participants a clear understanding of the business potential arising from combining physical energy and financial products. The following programs are basic level (group-live offering) courses with no prerequisites or advanced preparation required. *Course CPE credits are: Marketing 2, Management Advisory Services 1, Economics 1, Production 5, Specialized Knowledge & Applications 5. Total =14.*

## **November 13-14 — Introduction to Natural Gas Trading & Hedging— \$1,595 USD [REGISTER HERE](#)**

This program provides participants with a comprehensive understanding of the structures that underlie Natural Gas trading. The program begins by examining the dealing process; forward pricing in natural gas markets; and the strategic use of the forward price curve. The role of Swaps and swaps structures commonly used in today's trading is explored before a detailed overview of Location and Basis swap trading structures is reached. The second day considers basis trading and the underlying optionality in pipelines, as well as swing swaps and swing swap options on basis. The focus then shifts to consider time spread storage and trading mechanisms. The instruction ends with a session on hedging risk with Natural Gas Futures. The program concludes with a trading simulation that brings all previously discussed trading concepts together in a realistic trading "game".

### **Program Instructors:**

Paradigm's instructors bring to the classroom the hands-on experience of working in related business areas. Combining this extensive knowledge with their experience in conducting dedicated training for thousands of executives insures that our seminars feature lively interaction between participants and the instructor.

### **Venitta Ferguson**

Prior to joining Paradigm in 1999, Venitta spent her entire career in the natural gas industry. Recognition of her work led to Venitta's appointment as a member of the Natural Gas Advisory Committee to the New York Mercantile Exchange, where she was instrumental in fostering of Exchange instruments within the natural Gas industry. Venitta has practical experience of trading the physical energy markets and working with derivative products to control risk.

### **Hotel Arrangements**

- **When booking your stay at the San Diego Marriott Gaslamp Quarter hotel, please ensure you mention "Paradigm" in order to claim your discounted room rate of \$239/night.**

### **Special Promotions**

- **Team Discount** — Your organization may send one participant FREE with every 3 registered.
- **Early Bird Discount** — Register now thru October 10<sup>th</sup> and receive \$100 off of your registration fees.



### **Contact Paradigm**

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### **Event Location**

**The Marriott San Diego Gaslamp Quarter**  
660 K Street  
San Diego, CA 92101  
Phone: 1.619.696.0234 or 1.888.800.8118

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***Signup for any program before October 10<sup>th</sup>  
and we will deduct \$100 from its cost.***