Deal Structuring in Natural Gas Markets

November 17-18

Register On-line

Houston Marriott West Loop

Houston, TX

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. Structuring deals using Time Spreads, Spark Spreads and Tolling, and Basis Spreads will be covered in this course.

Detailed Seminar Outlines Below

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Course Deal Structuring in Natural Gas Markets

Day 1

Basis Spreads and Transportation

There are parallel methods for moving gas from one location to another — a physical method: pipeline transportation and a financial method: buying and selling. The interrelationship between these methodologies gives rise to useful transaction structures and the important basis swap market. Closing related to explicit basis swap trading are NYMEX-related EFP's and EFS's, which are also covered. Recognizing the tradable risk positions inherent in pipelines allows hedgers to use financial hedges to optimize the value of these assets. Also the ability to isolate locational risk from underlying price risk gives rise to sophisticated gas hedging structures.

Relationship between Transportation and Locational Basis

- Cost of relocating physical gas exposure
- Pipeline transportation
- Financial methods
- Ownership of pipeline capacity as a basis risk position
- Ownership of pipeline capacity as an option position

Synthetic Transport Using a Swap

- Using a basis trade to fixed transport cost
- Basis swap vs. basis spread
- Buying and selling basis

Basis Swaps vs. a Benchmark

- Quoting convention for basis swaps
- Defining the benchmark
- Creating a fixed price using NYMEX swaps, basis swaps and futures
- Hedging basis swaps
- Alternative structures for laying off basis risk positions

Group Review

Managing Pipeline Risk

- Recovering "sunk" demand costs of pipeline capacity
- Selling the long basis spread embedded in pipeline ownership
- Monetizing optionality from pipeline ownership
- Asymmetric risks
- Pipeline revenue under capacity release
- Synthetically removing revenue caps using basis trades

Managing Location Risk as a Component of Forward Gas Prices

- Component risks in pricing gas
- Managing component risks discretely
- Isolating basis risk from directional price risk
- Hedging with trigger structures
- Reverse triggers

Hedging Basis Using NYMEX EFP Settlements

- Exchange of Futures for Physical (EFP)
- Avoiding execution risk
- Basis spread pricing
- Structure and mechanics of the EFP
- The EFS – Exchange of Futures for Swaps

Optionality on Basis

- Pipeline capacity ownership as option on basis
- Rainbow options on basis
- Swing swap options on basis

Group Review

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Day 1 (continued)

Spark Spreads and Tolling: Hedging & Structuring

Tolling, the process of converting gas to power, can be achieved through physical capacity or through a direct exchange, either of physical or purely financial flows. The economic foundations of pricing and evaluating these cross-energy structures are developed in this section along with other common multiple-fuel transaction structures.

Multiple-Fuel Structuring

- Extending basis swap concept to cross-commodities
- Trading natural gas against electricity
- Conversion factors for thermal efficiency
- Understanding heat rates and thermal efficiency

Trading and Structuring Spark Spreads

- Operating margins for generators
- Pricing spark spread swaps
- Heat rate implications on spark spread pricing

Pricing Natural Gas as a Spark Spread

- Pricing natural gas in power terms (per MWh)
- Effective hedge of generating margins
- Pricing power in natural gas terms (per MMBtu)
- Embedding spark spread swaps
- Guaranteeing the competitive position of natural gas vs. power

Group Review

Day 2

Natural Gas Tolling

- Direct and reverse tolling
- Synthetic generation
- Synthetic tolling using swaps
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Market Implied Heat Rates

- The decision to generate or shut down
- Evaluating the economics of generating alternatives

Tolling Using Generating Capacity

- Sample tolling agreement
- Tolling economics
- Extrinsic value

Optionality in Generation

- Tolling through capacity as an option
- Owning a put on the spark spread

Monetizing Embedded Optionality in Generation

- Selling puts on the spark spread
- Selling calls on the spark spread
- Dispatch options

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Day 2

Time Spreads and Storage

There are parallel methods for moving gas positions from one time period to another — a physical method: storage and a financial method: buying and selling. This section examines in detail the relationship between these parallel methods and how they might be mixed and matched to address specific hedging needs.

Relationship between Storage and Shape of the Forward Price Curve

- Time spread as measure of contango/backwardation
- Buying and selling time spreads
- Choosing between physical and financial storage
- Optionality in storage

Storage Arbitrage

- Synthetic storage
- Arbitrage opportunity in lack of forward pricing discipline
- Need to package synthetic storage
- Weakness in trading software and systems in valuing storage trading
- Inter-period exchanges of physical as lending

Risk Control using Time Spreads

- Time spread risk
- Rollover hedging
- Advantages and disadvantages of rollovers
- Evaluating the full cost of gas using rollovers

Time Spread as a Forward Price Component

- Decomposing forward price risk into time spread risks
- Managing price risk separate from time spread risk
- Exploiting 'outlier' points on a forward price curve
- Locking in gas pricing at a margin below the prior year
- Using storage to hedge a time spread exposure

Group Review

Stack and Roll Hedging

- A common hedge strategy in energy markets
- The mechanics of stack and roll hedging
- Risks inherent in stack and rolling strategies

Managing Storage with Stack and Roll

- Managing unknown volume and timing of exposures
- Coordinating storage exposures with the hedge
- Residual time spread risk

Short-Term Storage Strategies

- "Park-and-Loan" programs
- Swing swaps
- Swing swap options

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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 program is basic level (group-live offering) courses with no prerequisites or advanced preparation required. *CPE credits for this class are: Accounting & Auditing 1; Consulting Services 0; Management 1; Specialized Knowledge & Applications 12: Total=14*

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Natural gas has a unique profile of risks, and with it an equally unique array of products and concepts to deal with them. For energy professionals grounded in the basic concepts of risk management, this course probes into how those tools and concepts can be applied specifically to deal with natural gas. It also demonstrates how the physical processes of transportation, storage, and generation interface with their financial counterparts; basis spreads, calendar spreads, and spark spreads, to create useful risk methodologies. It is the understanding of this integration of physical and financial that is key to optimal performance in the natural gas and other energy businesses.

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.

Frank H. Ribeiro

Frank began his career in the energy sector as an Economist with the Federal Power Commission. He has managed profit-generating deal origination and structuring teams at major international institutions. Since 1994 he has worked in close association with leading natural gas and power marketers, researching the emerging trading and deal structuring techniques evolving in these rapidly deregulating industries, and developing application-based training programs for electric utilities and energy marketers.

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