

## DAY 1

### *The Current State of the Equity and Commodity Markets - The "Message from Markets"*

- Measuring Nervousness / Uncertainty of Equity and Commodity Markets
- The Crude-Oil Markets
- Level and Slope of Crude-Oil Futures Markets
- Impact of Economic / Financial / Geopolitical Events on Implied Volatilities in the Crude-Oil Market
- Impact of Seasonality on Global NatGas Markets
- Future Inflation Rates
- Quantifying Future Inflation Rates
- Energy Prices and Inflationary Pressures
- The Refining Spread and Retail Gasoline Prices
- The Domestic NatGas Market: The Impact of Seasonality
- The March / April 2007 Futures Contracts

## DAY 2

### *Overview of Risk Management*

- Fundamentals of Forwards and Futures Contracts: Definition, Payoff Diagram, Pricing by Arbitrage
- Forward / Future Prices and Forecast Prices
- Risk-Management from a Corporate Perspective
- Commodity Swaps

## DAY 3

### *Option Pricing*

- Payoffs and Put-Call Parity
- Black-Scholes Formula
- Option "Sensitivities" (the "Greeks"): Delta and Gamma
- The Binomial Model and the Valuation of American-Style Options
- Real Options in Energy Markets: Power Plants as a Strip of Spark Spread Options; Oil Fields as the Valuation of an Extraction Option

## DAY 4

### *Estimating the Price Process in Energy Markets*

- Historical Volatility: The Term Structure of Volatility (TSOV)
- Estimating Volatility from Market Prices of Options in Energy Markets
- Historical or Implied Vols?
- Estimating a Mean-Reverting Process
- Characterizing the Volatility “Surface” Across Time and Strike
- Jump-Diffusion Process
- The Need to Extrapolate in Energy Finance: Valuation of Long-Dated Real Assets and Financial Structured Products; Extrapolating Crude-Oil Prices; Extrapolating Natural-Gas Prices; Extrapolating the Term Structure of Volatilities (TSOV); Extrapolating Correlations
- VAR and CVAR (Credit Value-at-Risk) in the Energy Industry

## DAY 5

### *Energy Derivative Products: The Role of Structuring, Calibration, Valuation and Hedging in Profitable Market-Making*

- Commercial Structured Products
- Categorizing Derivative Products: Option Collars, Average Options, Spread Options, Swing Options, Weather Derivatives, Commodity-linked bonds; “Swing” Options; Weather Derivatives
- Structuring and Valuing Option Collars
- Structuring and Valuing Average (Asian) Options
- Example of Calibration: Using Vanilla Options to Determine the Value of Volatility for Valuation of Average Options
- Non-Commercial Structured Products