

Pricing, hedging, and risk management for energy and power markets.

Product Description

Energy markets are not governed by the same rules as financial markets. That's why energy derivatives valuation requires derivative pricing models built specifically to address the unique nature of these markets. Seasonality, mean reversion, and price spikes are just a few of the issues in energy markets; as are the unique features of the derivative contracts traded. Whether evaluating half-hourly exercise frequencies in the case of power options, or a first-of-month indexed strike price in the case of natural gas options, the derivatives pricing software must be flexible enough to accommodate the plethora of contract provisions, yet intuitive enough for ease of input.

@ENERGY/Basics is a derivative pricing and risk management toolkit designed to evaluate exchange-traded and over-the-counter derivatives traded in the power, natural gas, oil, coal, metal, and soft commodity industries. @ENERGY/Basics is one of the modules of the @ENERGY suite.

What makes @ENERGY/Advanced unique? @ENERGY is the most comprehensive energy derivatives software toolkit available today. No other application can match @Energy in terms of breadth of instrument coverage or depth of models supported. @ENERGY is fully documented, rigorously tested, highly optimized, and comes with all the features that energy companies have come to expect from FEA analytics. That's why the largest energy marketers, producers, and consumers rely on @ENERGY to generate daily mark-to-market numbers, to support deal-structuring activities, and to hedge exposures across their entire portfolio.

Key Features

Cutting-edge Pricing Models. @ENERGY/Basics can value options using several methodologies. The Black-Scholes model values options using lognormal price diffusion. The mean-reversion model also uses lognormal price diffusion but accounts for the tendency of commodity prices to move back to a long-run average level. The truncated distribution model includes mean reversion and allows specifying a lower price bound. Two types of models are available to handle the price spikes observed in power markets. The mean reverting jump-diffusion model accounts for spikes followed by quick reversion to average price levels. FEA's regime-switching jump diffusion model allows for greater flexibility in defining jump characteristics which results in a much more realistic depiction of price spikes. Lastly, a multi-factor seasonal PCA model is available for pricing swaptions.

Flexible Inputs. With @ENERGY/Advanced you can:

- Express time periods with dates or tenors
- Specify a long, short, or closed position
- Specify entire price and volatility curves or only spot observations
- Specify forward prices directly instead of convenience yields
- Switch pricing models and their parameters on the fly
- Specify a value date different than your system time
- Easily switch between options on physical and options on futures
- Easily build and price customized strips on a variety of options
- Use optional and default arguments to enter the minimal amount of information necessary to get results

Comprehensive Results. Several price and risk measures can be calculated with a single function call including scalar risk measures (delta, gamma, cross gamma, vega, theta, and so forth). The functions also return delta, gamma, and vega risk curves, which give your true exposure to the entire price and volatility term structure, not just the spot as with traditional risk measures. These risk curves permit precise hedging. @ENERGY calculates implied correlation for each asset-pair of multiple-asset options.

Calibration. @ENERGY/Advanced calculates the mean-reversion rate, forward volatility curve, spot (implied) volatility curve, and average spot volatility using option market prices/implied volatilities or the historical volatilities of futures. You can also calibrate volatility inputs to an existing market smile, using a "sticky strike" or "sticky delta" model.



Coverage

The supported set of instruments can be extended by combining and chaining functions to value complex transactions. @ENERGY/Advanced values European multiple-asset and compound options, commonly used in capacity, transmission, and fuel arbitrage:

- Physicals
- Spread options, calendar spread options, crack options
- Compound options
- Best-of options

@ENERGY/Advanced includes templates for specialized trades and assets such as power generation and tolling contracts, pipeline capacity, and power transmission. FEA regularly expands instrument coverage and publishes new spreadsheet templates. In addition, @ENERGY/Advanced includes several utility functions such as a path simulator to allow for visualization of the price behavior of each model.

Software Architecture

@ENERGY is a Microsoft Excel® Add-In that is written completely in C/C++ providing for extremely fast calculations. It includes Excel Add-In functions (XLL files), customizable Excel templates, and documentation. When installed, @ENERGY XLLs add functions to Excel that are used like the built-in worksheet functions, allowing users to customize the included templates or create new ones. @ENERGY is also available as the ErgLib C library for Unix and Windows programmers who want to incorporate @ENERGY functions into custom and third-party C, C++, Visual Basic, and SQL database applications.

About FEA

Focusing on the energy, financial, and commodities markets since 1989, Financial Engineering Associates, Inc., an MSCI Barra company, is a leader in the development of financial derivatives valuation models and portfolio risk management software. Powered by innovation and excellent technical support, FEA has established leadership in developing a broad range of energy derivatives analytics and works closely with clients to adapt pricing models to changing market conditions. FEA leverages a network of selected system vendors and value-added distributors. FEA software systems are used by more than 250 institutional clients that include energy firms, money center banks, Fortune 500 companies, trading enterprises, and leading financial firms. For more information, please visit <http://www.fea.com>.

The information contained herein (the "Information") may not be reproduced or disseminated in whole or in part without prior written permission from FEA, Inc. The Information may not be used to verify or correct other data, to create indices, risk models, or in connection with offering, sponsoring, managing or marketing any securities, portfolios, financial instruments or products. None of the Information constitutes an offer to buy or sell, or a promotion or recommendation of, any security, financial instrument or product or trading strategy. Further, none of the Information is intended to constitute investment advice or a recommendation to make (or refrain from making) any kind of investment decision and may not be relied on as such. The user of the Information assumes the entire risk of any use it may make or permit to be made of it. NEITHER FEA, ANY OF THEIR AFFILIATES OR ANY OTHER THIRD PARTY INVOLVED IN MAKING OR COMPILING ANY OF THE INFORMATION (each, a "Party") MAKES ANY WARRANTIES OR REPRESENTATIONS AND EACH PARTY HEREBY EXPRESSLY DISCLAIMS ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. Without limiting any of the foregoing, in no event shall any Party have any liability regarding any of the Information.

June 2007

For More Information

Please contact your local FEA office, or visit us online at www.fea.com

BERKELEY
2100 Milvia Street
Berkeley, CA 94704-1113 USA

tel +1.510.548.6200
fax +1.510.548.8798

NEW YORK
Wall Street Plaza, 88 Pine St, 2nd Floor
New York, NY, 10005 USA

tel +1.212.804.3900

LONDON
75 King William Street
London, EC4N 7BE, United Kingdom

tel +44.(0).20.7618.2101

HOUSTON
Williams Tower, 2800 Post Oak Blvd, 46th Floor
Houston, Texas 77056 USA

tel +1.713.438.4688
fax +1.713.438.4687